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LAMBORGHINI HURACÁN LP580-2, MINI CLUBMAN

THE SAFETY STORY OF THE ALL-NEW
2016 CHEVROLET MALIBU

AS TOLD BY THE PEOPLE WHO ENGINEERED IT.

We sat down with active safety expert Raymond Kiefer and engineering safety specialist MaryAnn Beebe to talk about the innovation that went into creating the available active safety technologies in the all-new 2016 Malibu.



**RAYMOND KIEFER**

STAFF TECHNICAL FELLOW, ACTIVE SAFETY

What are some of the advanced active safety features engineered into the all-new 2016 Malibu?

Malibu offers a sophisticated range of radar, camera and ultrasonic crash-avoidance technologies to help drivers avoid crashes in everyday driving situations. In fact, we've engineered a number of available safety features, including Low Speed Front Automatic Braking, Lane Keep Assist with Lane Departure Warning and Rear Cross Traffic Alert. Before you make a lane change, the available Side Blind Zone Alert with Lane Change Alert feature lights up a side mirror icon if a vehicle is rapidly approaching or in your blind spot. Available Front Pedestrian Braking marks Chevrolet's first foray into helping drivers avoid pedestrians. An amber icon appears if a pedestrian is detected ahead and, if you're seconds away from a crash, red LED alerts flash on the windshield along with rapid beeping. If braking is delayed or if a pedestrian suddenly appears, the brakes are

automatically applied. This may not prevent the crash, but reducing crash impact speeds can make a real difference.

What's the difference between radar and camera technologies in active safety features?

Both technologies do an outstanding job of helping drivers increase awareness of what's going on around them. Radar is an active safety technology that improves vehicle detection range and works better in inclement weather conditions that may be a challenge for cameras. Camera technology works more like the way we see and avoid objects every day by using visual looming cues about the way objects grow in size as we approach. This technology is used in the available Low Speed Front Automatic Braking and available Front Pedestrian Braking features. Cameras can also show you hazards that you can't see directly with your eyes or mirrors.

“Teen Driver is a tool for parents to continue to teach safe driving habits to their young drivers.”

MaryAnn Beebe

ENGINEERING SPECIALIST, TEEN DRIVER

**MARYANN BEEBE**

ENGINEERING SPECIALIST, TEEN DRIVER

What is the Teen Driver¹ technology and how does it work?

Teen Driver is a tool for parents to continue to teach safe driving habits to their young drivers. It is a new feature that lets parents manage certain vehicle settings to encourage safer driving by their teenagers. Parents can set a volume limit for the radio and set a speed warning that will deliver an audible and visual warning when the vehicle exceeds the preset speed. When Teen Driver is active, the radio is muted if the driver or front passenger is not wearing a safety belt, and all equipped active safety systems are defaulted to “on.” Our goal was to use technology to help teens develop safe habits and, ultimately, be safer on the road.

How does the in-vehicle report feature work with other active safety features?

The Teen Driver in-vehicle report feature provides a snapshot of a teen's driving behavior. A parent can enter their Teen Driver PIN, and the report shows distance driven, maximum speed, number of over-speed warnings and how many times certain active safety features were engaged. For example, if the vehicle is equipped with available Forward Collision Alert or available Front Automatic Braking, the in-vehicle report will show how often these safety features were triggered. The in-vehicle report empowers teen drivers to show they've been driving responsibly, or see what driving skills they need to work on, and parents can continue to coach their new drivers. As a mom myself, it's rewarding to know that we're helping make a tangible difference. We want to set the industry standard for safety.



Safety features are no substitute for the driver's responsibility to operate the vehicle in a safe manner. The driver should remain attentive to traffic, surroundings and road conditions at all times. Read the vehicle Owner's Manual for more important safety information.

¹ Currently available on 2016 Malibu LT, Hybrid and Premier with the available 8-inch diagonal Chevrolet MyLink display.

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COMPARISON TEST CHARIOTS OF THE DADS

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xDrive35i, Land Rover Range
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by Tony Quiroga

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The Blue Oval has turned the plain-Jane Focus into a fire-breathing squirrel.

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Pockets empty, armed with only our wits, we road-trip across the South in a Rolls-Royce Wraith.

by Neal Pollack

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LONG-TERM TEST FAREWELL, MY LOVELY

After 40,000 miles, we find that we still like smooth shiny cars, hard-boiled and filled with sin.

by Daniel Pund



ON THE COVER

The Continental
Drifter.

photography by
Greg Pajo

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03.2016

caranddriver.com

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The BMW with the sideways engine.

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Sideways at any speed.

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MINI COOPER CLUBMAN

Your cool uncle is in town, and he's driving a Clubman sideways.

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CHEVROLET MALIBU HYBRID

The fact that it's not a big deal is what makes it a big deal.

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A bloodless evolution.

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TESTED **MAZDA MX-5 MIATA AUTOMATIC**

Like nonfat ice cream.

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2017 MERCEDES-BENZ GLS-CLASS

A Benz by any other name would swell so big.

▼ ETC.

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Vehicular homicide: The Corvette kills its engine, VW tries to kill itself, and Phillips kills mice.

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WHAT I'D DO DIFFERENTLY

Bruce Canepa.

▼ ON THE WEB

INSTRUMENTED TEST**2016 HONDA ACCORD 2.4L CVT**

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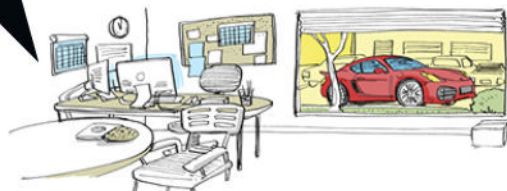


backfires

□ hosted by E.D.

007
03.2016

Sic your dogs on us at:
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or join the discussion at:
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ALL THE PRETTY HORSES

I never thought I'd say this, but there is such a thing as too many ponies. Month after month there's another Mustang on the cover. Is Hearst consolidating cover photos now?

ALEX MOKAY GRAY
SAUGATUCK, CONNECTICUT

How can you battle it again and for the very first time? Your fourth-grade English teacher will not be happy.

IGNACIO ITURBE
BONITA, CALIFORNIA
Oh, you know Mrs. Cunningham would've gotten that joke—Ed.

MY LITTLE PONIES

In the Ford Mustang and Chevy Camaro comparison ["Invasive Species," December 2015], you mentioned the BMW M235i, which I drive. The M235i is an excellent sports car and would make a very interesting matchup against these two—Mustang and Camaro—over a course like Mid-Ohio. How about seeing how they stack up against a good sports car in the same budget range?

DAVE PREPELKA
MOON TOWNSHIP, PENNSYLVANIA

So it appears that it's the '90s all over again. The Camaro holds a performance edge, yet the Mustang is far easier to live with on a daily basis. How did this play out last time? I predict the Mustang will repeat history and outsell the Camaro by a large margin, particularly since the Mustang is sold in foreign markets now (there's even a right-hand-drive version) and the fact that the performance difference is not nearly as pronounced

as it was back in the '90s. Zero to 60 mph in 4.4 seconds is still plenty quick, and it's \$4000 less than the Camaro! As for the 5.0 being too quiet, use some of the \$4000 you saved to get a set of Flowmasters.

ETHAN ASHENBERNER
VANCOUVER, WASHINGTON

I'm 50 years old, but I ran from the mailbox to the house like a little kid when I saw the Camaro versus Mustang on the cover of the December issue. The General didn't let me down. Of course, the only real number that mattered to me was quarter-mile time for the Camaro at 12.3 seconds versus the Mustang's 13.0. But a higher top speed (165 mph versus 164) was icing on the cake. I'm all in again, Chevy! Keep it up!

CRAZY GEORGE EISCHEN
FAIRVIEW, OKLAHOMA

So Chevy squashed the roof on the Camaro even *more*? I am 6 foot 4 inches and wear an XXXL and that just ain't gonna work! DAMN!

RON BURR
LETHBRIDGE, ALBERTA

Sir: Regarding your "Invasive Species" test in the December issue, I would only give the Camaro SS a 5 for interior styling (not 8) due to its boring economy-car interior. That's something that will depress you daily. Hence Camaro 204, Mustang 205. Mustang wins, you're wrong!

JAMES BEHRMANN
KATY, TEXAS

I'm only running this because he called me sir—Ed.

With every issue of C/D that features a Camaro and Mustang comparison also

come the countless letters from Dodge fanboys wondering why the Challenger was not included. I'm certain that 80 percent of the letters sent in will be from butt-hurt Dodge fanboys wondering why the Challenger was not included (I hypothesize that the other 20 percent will be related to how drive-through funeral homes work). Many will be asking for refunds, so please consider giving in to their demands and give them back the \$12 they paid for the entire year so we don't have to hear that infernal complaining.

WARREN SHERIDAN
SAN ANTONIO, TEXAS

Tingwall, are you serious? "Similarly" equipped Challenger? The Scat Pack would eat both these "muscle" cars for \$3000 less. Comparo that! Automatic-equipped 2015 Scat Packs are running high 11s all day long in the quarter, pull a g, have 30-plus more horsepower, and have no speed governor. So I guess you were right to leave this one on the bench. Must be like putting the coach's son in the game and benching the all-star player. Scat Packs are back, bitch!

MICHAEL LAVENS
AVOCA, MICHIGAN

Here's the straight scat: The Challenger Scat Pack runs the quarter in 12.6 at 114 mph and pulls 0.90 g on the skidpad. Also, it lost to the Camaro SS and Mustang GT in 2014, so we benched it—Ed.

I am old, so I remember this stuff. The Mustang arrived in 1964 and gave birth to a genre called "pony" cars, an obvious homage to the Mustang being the first one. The "muscle" cars described vehicles like the Chevy Chevelle SS396, Plymouth GTX and Road Runner, Dodge Hemi Charger, maybe even the



Ford Fairlane 427. I see on page 48 that the new Mustang and Camaro are described as muscle cars. When did this reassignment take place?

JEFF RADIN

VENICE, CALIFORNIA

Sometimes things get renamed, Freddie—Ed.

CARBONIFEROUS ERA

Regarding the BMW 750i xDrive road test ["Where to This Morning, Boss? And Will You Need That Jacket Pressed?" December 2015]: So I should not look at this vehicle as a 4883-pound road hog, but as a highly advanced transportation module made out of next-generation lightweight materials that merely happens to weigh the same? Gotcha, boss. Anything you say, Cap.

BRUCE ARMSTONG

HALIFAX, NOVA SCOTIA

After reading about the BMW 750i xDrive, I came to the conclusion that for the price of the 750i, one could obtain a more spacious and comfortable SUV. Even the Germans don't ignore SUVs anymore.

PETER GARTSIDE

CEDAR HILLS, UTAH

If only I'd ignored this letter—Ed.

STAINED BOW TIE

Enjoyed the 2014 Chevrolet Corvette Stingray long-term test ["Half & Half," December 2015], however, you said, "Somehow we managed to not pry off this [Car and Driver] badge before we returned the car." You can bet the dealer that resells the car certainly will pull off the Car and Driver badge. Everybody knows how much you guys flog a car and that if they left the badge in place, it would greatly reduce the resale value.

ATI KOVI

POTOMAC, MARYLAND

How many times do I have to read about Corvette finally getting its seats right but yet never being good enough? Your test shows what has been a long-known fact: A Corvette makes a lot better mistress than a wife.

SCOTT COATS

RUPERT, IDAHO

OLD MAN WINTER

You are to be commended for including the Nokian Hakkapeliitta R2 in your winter-tire test ["Cold War," December 2015]. It is the go-to tire here in northern Vermont for all the reasons that you found to be valid in your testing, and yet it never seems to appear in any of your competitors' winter-tire comparisons. They are often discounted to put them in the same price range as a Michelin, Bridgestone, or Dunlop, but that doesn't really matter in January in Vermont. The price difference is less than the cost of my insurance deductible, so I'm good to go with my four R2s and a greatly reduced winter-driving stress level.

DOUG DREIBELBIS

JERICHO CENTER, VERMONT

Your comparison-test article on studless winter tires was excellent! While I am a die-hard studded-tire user, being in one of the few states still allowing them, I hope your readers will fully appreciate the safety benefits offered by snow tires. The better stopping distance may very well mean the difference

between a near miss and bodily harm—and long-term pain and rehabilitation—not to mention the property damage and insurance-company hassles! Avoiding all that is far better than the small inconvenience of swapping out the tires and rims each fall and spring.

DICK BEAN

WESTWOOD, MASSACHUSETTS

It's a pretty safe bet that you did not see any signs reporting a distance of 188 miles to Murmansk, Russia. Even the English have mostly abandoned the English system of measurement. Meanwhile, American teachers and children spend a lot of time learning how many ounces are in a gallon and how many ounces are in a pound. No wonder our kids do so poorly on standardized math exams after wasting so much classroom time on our ridiculous system of measurement.

TONY WASSERMAN

SAN FRANCISCO, CALIFORNIA

You're a few dekameters off the mark, Wasserman. We converted the sign for you from kilometers because, you know, America—Ed.

CIVIC LESSONS

In the December 2015 road test of the 2016 Honda Civic Touring ["Street Scene, Take Four"], the accompanying caption under the picture of the car's interior states, "... the Civic's interior looks positively pedestrian."

Yet a few inches away on the opposite page, on the "nutshell summary," it states, "Well-dressed interior." Does Jeff Sabatini think that "pedestrian" equates to "well-dressed"?

FF

OLD BRIDGE, NEW JERSEY

Sabatini thinks this letter is positively pedestrian, but I think he means pedantic—Ed.

COOKIE BREAK

An oatmeal-raisin cookie from Starbucks was found under the passenger's seat of

the long-term Porsche Cayman. It is on the table in front of Sue's desk.

ERIC TINGWALL

PLYMOUTH, MICHIGAN

If it's gluten-free, it's mine—Ed.

RX FOR SUCCESS

You were wondering how the new Lexus RX will play at the country clubs in Peoria [Drivelines, December 2015]. Last time I played Weaver Ridge, in Peoria, Illinois, I was packing up my clubs when a red Dodge Viper roadster flew up to the clubhouse. Then the blond-bombshell passenger, wearing nothing but a string bikini, stood up on the passenger's seat, let out a whoop, ripped off her top, and shook some clearly aftermarket modifications at some arriving wedding guests. Then she plopped back down into the car, and the

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ROAD WARRIORS Zeb Sadiq, David Beard

CONTRIBUTING EDITORS

Clifford Atiyeh, Csaba Csere,
Fred M.H. Gregory, John Pearley Huffman,
Davey G. Johnson, Peter Manso, Bruce McCall,
P.J. O'Rourke, Tony Swan, James Tate,
Kevin A. Wilson, Dweezil Zappa

CONTRIBUTING ARTISTS

Mark Bramley, Bryan Christie Design,
Jim Fets, Robert Kerian, Aaron Kiley,
James Lipman, Charlie Magee, Sean McCabe,
Chris Philpot, Roy Ritchie, John Roe,
Michael Simari

EDITORIAL OFFICE 1585 Eisenhower Place, Ann Arbor, Michigan 48108

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driver ripped a burnout and tore off out of the parking lot. So... sorry, what was the question?

CHRIS STACK

ARLINGTON HEIGHTS, ILLINOIS

That's what we meant—Ed.

CATTY

While reading the article on the new Jaguar and thinking about newness and “oldness,” I discovered your ink no longer smudges under my thumbs. Thank you.

RICK WENDLING

MERCED, CALIFORNIA

FRAUDVERGNÜGEN

So the choice between being honest and pulling diesel VWs until emission standards could be met or lying and taking people's money for highly polluting cars is your idea of “VW engineers [being] painted into a corner” [“Caught Black-Handed,” December 2015]? Fascinating. “Given the choice... VW engineers chose a middle path.” WTF? They didn't choose either option; the cheat made it so their diesel engines belched out high pollution with everyday driving, which is specifically opposite of both your choices. And the last paragraph is just choice; you are basically saying the end of this could very well be a case of “easier to ask for forgiveness than permission.”

RYAN WEST

SURREY, BRITISH COLUMBIA

I had recently been grappling with whether to buy a new four-door Volkswagen GTI (this would be my third

VW) or a new Mazda 3 s GT; the cars cost virtually the same. The GTI is quicker and more refined; the Mazda is more reliable and fun to drive. What to do? Then the VW diesel scandal broke.

Of course, the GTI has a gasoline engine, not a diesel one. Yet I can imagine how betrayed millions of customers felt upon learning that VW management (you think engineers created this scandal all on their own?) had happily screwed them over. And then I thought, if VW betrayed them, why should it not somewhere down the line betray me?

That conclusion convinced me that VW has more serious problems than prospective fines and civil suits. Volkswagen has severely damaged its reputation among its most loyal American and European customers. That's when I bought the Mazda.

JIM VRIESACKER

REEDSBURG, WISCONSIN

Aaron Robinson's piece on the diesel-emissions scandal mentioned a water-and-urea catalytic technology as a way to reduce harmful diesel tailpipe gases. Did VW ever realize that it could've asked its male customers—who already come equipped with their own tank, plumb, and plumbing—to contribute to solving the

problem while driving the car with a simple built-in urinary catheter?

DR. CALVIN J. MAESTRO JR.,
MD, MBA/HCM
OSCODA, MICHIGAN

Doc, you're a real whiz—Ed.

Aaron Robinson's attempt to, shall I say, “justify” Volkswagen cheating falls far short. If, as stated in the article, diesel sales make up only 0.2 percent of the American market, then all Volkswagen had to do was forgo selling diesel automobiles in the U.S. Instead, it created an unethical corporate climate and chose to cheat in order to sell cars. There it is, plain and simple. It should not have taken *Car and Driver* two pages of its magazine to come to any other conclusion.

TED ANDREWS
SIMI VALLEY, CALIFORNIA

BETTER MOUSETRAPS

Like John Phillips, I too was desperate to rid my Toyota Highlander of mice [“The Afflictions of Summer,” December 2015]. These are the steps I took after using a snake video scope and an air compressor to remove the buggers and their nests:

1. Before turning the car off, hit the recirculation button to close off access to the cabin filter from the engine compartment. Do this every time you park so they cannot get into the cabin.
2. Hang at least four of those pine-tree



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air fresheners throughout the engine compartment and on top of the cabin air filter. Mice supposedly hate the smell.

3. Deploy several bags of "Fresh Cab" throughout the engine compartment, glove box, and inside the vehicle. Farmers swear by these.

4. Install at least two of those ultrasonic noisemakers near the vehicle. Pick ones with lots of good reviews on Amazon.

5. Start feeding the cat less, so it's more likely to go hunting.

If this doesn't work, at least you will have a nice-smelling vehicle, inside and out. Just be sure you don't give the highway patrol a reason to pull you over: They will smell you a mile away and think you're transporting contraband. Good luck explaining your way out of that!

CHRIS POWER
LOVELAND, COLORADO

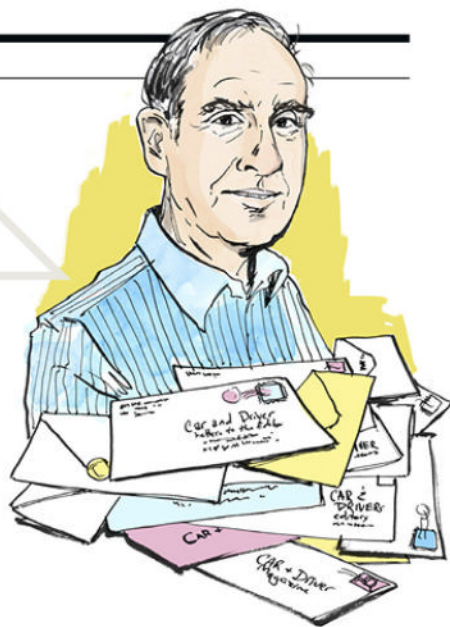
LETTER OF THE MONTH

For decades I have wondered how to get a letter published. After reading December's "Backfires," I think I know.

TOM ORASHAN
SAN ANTONIO, TEXAS

Sorry to read of the mouse issue incurred by Mr. Phillips. A bit of caution about using the assortment of baits and poisonous snacks: The offenders will carry those things off to the most inaccessible places in a vehicle and stash them there for future dining. This often results in even more problems like jammed blower fans and internal duct direction doors. I've always found that just the traps are the best practice. Besides, there is no sound as gratifying coming from the garage as a trap snapping in the middle of the night.

WILLIAM JOHNSON
FREDERIC, WISCONSIN



LETTERS ON LETTERS

In response to Alex Tanford's comment about wives recycling *C/D* back issues [Backfires, December 2015]. In this household, I subscribe to *C/D*, and it is my husband who is at fault for recycling the magazine too soon. Chicks dig a good comparo, too! And to those who write in just to complain without adding anything interesting to the conversation, we get it: You have a big package, you know everything, and you could run *C/D* better. (The editor in me had to say that, even if it makes me a whiner, too.)

In all seriousness, keep up the great work, *C/D* team—I love getting the publication. And my husband loves seeing back issues all over the house.

MEGHAN STETZIK
AKRON, OHIO

NOT-TRUE CAR

I'm writing to inform you about an error in the "New Rules of Car Buying," part 3 of 5, that appears in your December 2015 issue. It states that TrueCar has a partnership with Costco. This is not true. They are not affiliated with our program at all and are actually our competitors.

HONEY MAE KENWORTHY,
DIRECTOR OF CORPORATE
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SAN DIEGO, CALIFORNIA

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upfront

□ edited by JARED GALL

★ CENTER OF GRAVITAS

GET LOW — Keeping a car's mass close to the ground and centrally located fosters agility. To that end, Lexus focused on keeping the LC500's occupants low, the wheels out at the corners, and the engine behind the front-axle centerline.



A VERSION OF THE RC F'S V-8 POWERS THE LC500. EXPECT A NEW TURBOCHARGED ENGINE FOR THE LC F.

REVEAL OF THE MONTH

Lexus Nexus

THE LC500 LUXURY COUPE SLYLY DEFINES WHAT LEXUS WANTS TO BE. *by Jared Gall*

THE LAST TIME Lexus ran a supercar up its flagpole, people's heads exploded. Well, the 500 LFA drivers' heads did, but the rest of the 7 billion earthlings were merely confused. It was hard to see how the carbon-fiber tub or 9000-rpm 72-degree V-10 were going to trickle down to ES350s and RX hybrids. So this time, Lexus is cloaking its hi-po bellwether in, um, sheep's clothing.

Even Lexus's language masks its intent with the LC500. The company is careful not to call this 2+2 a sports car, instead using descriptors such as "grand touring coupe" and "luxury sports coupe." But the LC is studded with serious performance-car bona fides such as an engine that sits fully aft of the front-axle centerline, an active rear spoiler, an available carbon-fiber roof, even carbon-fiber inner-door panels and a composite trunk floor. Make no mistake: This is Lexus's new North Star, one far better positioned to influence the lineup than the LFA. It points to the fact that this is a company on the verge of major change.

↓ If luxury is chiefly about the details, the LC might be one of the most luxurious cars of all time, simply on the basis of its head- and taillights.

□ CHASSIS

Lexus isn't mincing words when it comes to the LC500's skeleton, calling it an "all-new, rear-wheel-drive architecture that does not share components or design ideology with any current Lexus platform." It will, however, serve as the blueprint for the brand's future front-engine, rear-drive vehicles. Lexus claims that it is the most structurally rigid unibody the company has ever produced, with more high-strength steel than in any of its vehicles and stiffness exceeding even that of



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upfront

REVEAL OF THE MONTH



the LFA. Meanwhile, the bumper beams, the front suspension-mount reinforcements, and most of the suspension links are aluminum, as are the door skins. Expect a curb weight right around two tons, with a rear-mounted battery doing its part to limit the nose's load to 52 percent.

Even though Lexus shies away from calling the LC500 a sports car, the company does say the driver's hip point was "engineered to be as close as possible to the vehicle's center of gravity." The goal is to make the dynamic feedback clear, and chief engineer Koji Sato says his team spent "more than triple" the usual amount of time perfecting the LC500's road feel.

POWERTRAIN

About that supercar talk: The LC500 is launching with Lexus's current hottest engine, the 5.0-liter naturally aspirated

V-8 from the RC F and GS F. Output is a respectable but not at all supercar-appropriate 468 horsepower and 391 pound-feet of torque. Lexus says it's not because the company is lazy or cheap that the LC500 isn't turbocharged; it's because of the naturally aspirated engine's linear throttle response and emotional sound. But it's not so emotional that the exhaust isn't artificially enhanced through the speakers.

And it's likely that the LC will only lack turbochargers temporarily. The V-8 borrowed from its siblings is incongruous with its front-mid-engine positioning and other exotic cues. Lexus isn't talking about any high-performance variations yet, but if the LC is truly going to be a flagship, expect two additional powertrains down the road. One, of course,



↑ The grille, a.k.a. the Predator Face, starts as crosshatched wires at its base and morphs into rhombi at the car's hoodline.

will be a hybrid. But for the other: If Toyota president and CEO Akio Toyoda isn't personally shepherding an LC F high-performance model through develop-

ment, we'll be shocked. Expect a whole new engine, likely something with a pair of turbos and output that moves it into the Germans' 600-hp neighborhood.

We expect that one version will also use the LC500's new 10-speed trans, an automatic of Lexus's own design. The high-performance intent is on full display here, too, as it uses the lightest, smallest-diameter torque converter ever used in a Lexus. The company claims a zero-to-60 time of 4.5 seconds for the LC500, which we assume to be conservative by at least a couple of tenths.

IF THE CAR LOOKS A BIT BLOCKY IN SIDE PROFILE, THIS VIEW SHOWS THE EXTENT OF THE BODY'S SCULPTING. THE FLOATING ROOF IS AN INCREASINGLY POPULAR THEME.





STAMPED INTO THE REAR FASCIA IS A VISUAL ECHO OF THE LC'S FRONT SPINDLE GRILLE.



EXTERIOR

In profile, the LC500 is a slab-sided study in basic coupe proportions. But the greenhouse's dramatic rearward taper allows for powerful haunches, which together with wild detailing on the nose and rear help the car transcend its silhouette. Designers did their best M.C. Escher homage with the tessellated grille mesh, which morphs from zigzag wire frames down near the ground into a mosaic of rhomboids at the hoodline. Barbed daytime running lamps and vertical air intakes flank the grille. The view from behind is likewise dramatic, with the bodywork mirroring the shape of the spindle grille and the taillights set in housings that mimic the air intakes in the nose.



THE DOOR HANDLES HAVE NO BEZELS. THEY EMERGE FROM THE FOREHEAD OF WOLF, SON OF MOGH, UNADORNED BUT NICELY STYLED, WITH A HAND-FRIENDLY PROFILE.

INTERIOR

The caramel-colored leather and Alcantara of the LC's interior definitely says "grand touring" more than "sports car." Here, too, details enliven the experience. Those shift paddles mounted behind the steering wheel are magnesium. And check out the strakes cut by the wind, it seems, into the door panels aft of the door handles, which jut through the upholstery without a typical dish or bezel. To declutter the center console, controls for vehicle-mode selection move to a pair of stalks on the sides of the instrument panel.



HOUSEKEEPING

It's anybody's guess when the LC F might appear to raise this platform to its fullest potential, so here's ours: two to three years. But the LC500 should arrive at your dealer just a year or so from now. Pricing won't be settled until that date draws near, but consider that the BMW 650i starts at around \$90,000 while the Mercedes-Benz S550 coupe opens north of \$120,000. Figure on the Lexus falling between those two, likely landing on the high side of \$100,000.

Lexus is the No. 3 luxury brand in the U.S., and a flagship coupe is unlikely to move it past Mercedes and BMW. But the LC suggests that Lexus aspires to more than greater volume. It's looking to invigorate its showrooms and its customer base. We like where this is headed.



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THE LITTLE
THINGS

The most commonly leased cars are small luxury sedans. Leases soaked up 60 percent of these models. More than half of all luxury sedans of any size are leased.

The Lease They Could Do

WHICH BRANDS' BUYERS DON'T BUY? *by Clifford Atiyeh*

WHAT DO DRIVERS OF SMART Fortwos and Maseratis have in common? It's not their propensity to park illegally, but a shared distaste for car ownership. Three-quarters of them lease, the easiest way to slide into any new car with the least commitment and typically less upfront cash. With help from analytics firm IHS Automotive, we gathered lease rates for 41 brands to see whose customers actually buy and whose merely lease. While only one-quarter of all new retail transactions are leases, luxury brands make

the bulk of their profits from them. Turn in the old car, throw down a few grand, and poof!—there's a new Mercedes E350 wearing your old license plate.

Since the 2008 recession, automaker-owned banks have freed up more credit, which only makes leasing more attractive. The main growth areas? Leases of non-luxury compacts and crossovers, plus full-size pickups, are proof that leasing is "expanding out of the traditional segments," says IHS analyst Tom Libby. And many off-lease cars are remarketed as certified pre-owned; leasing one perpetuates a cycle that keeps profits humming and monthly checks outflowing. Here, we chart the percentage of each brand's new-car customers who lease:

ROLLIN' IN THE CHEAP

What are Rolls-Royce customers doing leasing? you ask. With deals on the Wraith as good as \$3999 a month for 48 months and only \$29,995 down, how could they not?

LEASE TIP

Watch your money factor. That five-decimal figure in the lease contract is actually an interest rate—multiply it by 2400 to get the true average percentage rate, or APR—that can make or break your monthly payment.

ALFA ROMEO 1%

4% FERRARI

8% MITSUBISHI

12% DODGE

13% RAM

15% McLAREN, SUBARU

16% TESLA

20% JEEP

21% CHEVROLET, FIAT, FORD, LAMBORGHINI

22% NISSAN, TOYOTA

23% ASTON MARTIN

24% CHRYSLER

26% GMC, HYUNDAI, KIA, MAZDA

27% INDUSTRY AVERAGE

29% MINI

30% PORSCHE

31% HONDA

34% BUICK

36% LAND ROVER

38% BENTLEY

41% CADILLAC, VOLVO

42% VOLKSWAGEN

45% ACURA

50% AUDI

51% ROLLS-ROYCE

53% LINCOLN, MERCEDES-BENZ

57% BMW, JAGUAR, LEXUS

64% INFINITI

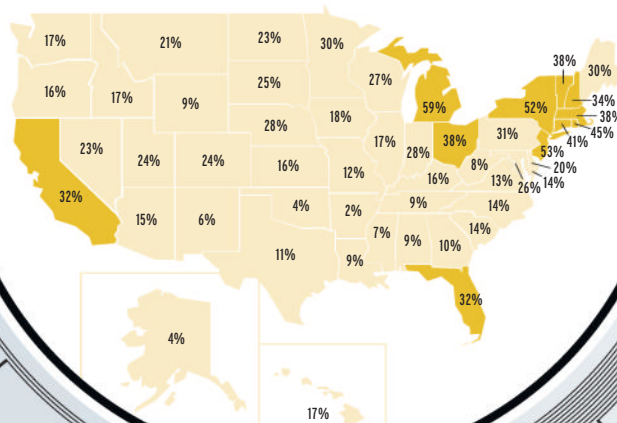
74% MASERATI

80% SMART

STATE OF AFFAIRS

New Englanders love their leases, as five of the chowder-chugging states rank in the top 10. Texans don't trust them so much. Despite being the No. 2 retail auto market (behind California), Texans lease just 11 percent of their new cars. Arkansas comes in last with just 2 percent.

● Top 10 are marked in dark yellow.



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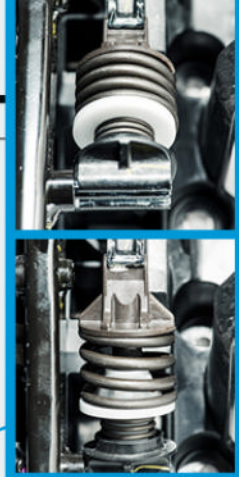
On the Stick

WHAT ARE THE MAKINGS OF A GREAT MANUAL TRANSMISSION?

by Csaba Csere

SHIFTING GEARS IS one of the most satisfying things you can do in a car. But not always. A ropey shifter or a gooey clutch can suck the joy out of driving a manual and lend credence to Porsche's position that its dual-clutch trannies render them obsolete. To learn the secrets of satisfying shifters, we interviewed the engineers for two of America's biggest handfuls, the Dodge Viper and the Ford Mustang Shelby GT350.

The ideal shifter has short throws, moderate effort, and a positive, unambiguous feel. Good clutch feel means satisfying, progressive weight with linear, easily modulated engagement. Ford defines the latter via 17 different parameters, including total pedal travel, pedal force, and the disengagement point. But the two key pieces of the puzzle are effort—both its peak and the linearity of its rise—and the modulation travel, or the pedal swing from zero to full engagement. Here's how they put it all together:



OVERCENTER SPRING

To reduce clutch effort, Ford uses a small coil spring built into the pedal lever. Halfway through the pedal's travel, the spring goes overcenter (becomes active) to cut the total effort from about 70 pounds (without a spring) to a maximum of 35 pounds. A clutch effort this light is unusual in a car with 526 horsepower and 429 pound-feet of torque. But Joe Johnson, FCA driveline development engineer, says that if not carefully calibrated, overcenter springs can harm linearity. This is especially true when the changeover point at which the spring starts to reduce effort is near the clutch's engagement point. So the Viper goes without such assistance, requiring a stouter 47 pounds of peak effort.

GOOD CLUTCH FEEL GETS HARDER TO ACHIEVE WITH POWERFUL ENGINES AS THE CLAMPING FORCE THE CLUTCH NEEDS TO GENERATE RISES WITH ENGINE OUTPUT. AS CLAMPING FORCE GROWS, THE CLUTCH-PEDAL LEVERAGE NEEDED TO OVERCOME IT INCREASES, AND THIS GREATER MECHANICAL ADVANTAGE CAN DIMINISH FEEL.

SHIFTER

A tight shift linkage limits shifter slop. "Our linkage [shown below] uses all solid bearings until you get to the handle," says Ford powertrain engineer Jeff Albers. "In the vertical part of the shift lever, we have a soft isolator to limit vibration, but it's in a tight cup with limited travel." Positive feel is primarily the responsibility of the detents, spring-loaded plungers that engage shallow depressions on the shafts that hold the shift forks in place. "We wanted that sense of force building and falling when you select a gear," says Albers. "The shape of the detents and their spring forces are critical to that."

DIRECT INPUT

The Viper's shifter, on the other hand, is a simple beast. "Our powertrain is mounted so far back that the shifter comes directly out of the gearbox and ends up right where it needs to be," says FCA's Joe Johnson. This makes for the most direct shifter possible, but at the price of the lever vibrating with the Viper's big engine. Johnson says he likes the trade-off.

Moreover, Johnson tells us the Viper's transmission has no detents. He says: "You are actually feeling the synchros engaging the gear side profiles as they slide home. It's about an eighth of an inch of motion in the gearbox and less than half an inch at the shifter ball." In lieu of spring-loaded detents, the Viper has springs that center the shift-fork shaft and the shift lever in the neutral position. Interaction between the synchronizer and the shift collar holds engagement in each gear.

DUAL-PLATE CLUTCH

Both the Viper and the GT350 use dual-plate clutches, with the two driven (or friction) discs splined to the transmission's input shaft. An additional intermediate plate, basically a second, slimmer flywheel for the friction discs to grip onto, nests between the friction discs. Smaller discs have less rotating inertia [see "Dual-Mass Flywheel," below], and each plate increases the clutch's torque capacity. Motorcycles and F1 cars use six or more driven plates in their clutches, which can be as small as four inches in diameter.

CUSHION SPRINGS

Engineers manipulate the width of the clutch engagement point with cushion springs. These are wavy steel plates between the friction pads on the clutch disc. Wavy springs make for a wider engagement because additional motion is required to fully compress them.

DUAL-MASS FLYWHEEL

A dual-mass flywheel uses two rotating plates coupled by a polymer band. Each plate vibrates at a specific frequency, and as they respond to the rpm variations in the crankshaft caused by the engine's firing pulses, the flexible coupling absorbs vibrations, reducing shifter wobble. Ford's Albers says this eases shifter movement, as less vibration means his team can remove the coil springs normally used in clutch discs to absorb torsional vibration, shrinking the disc's overall diameter. "This also reduces their rotational inertia, which is very important with an engine that revs over 8000 rpm," says Albers. "On the old Boss 302, it was hard to pull a gear at 7500 rpm because there was so much inertia carried by the transmission's input shaft." Lower rotational inertia makes for quicker shifts, as it lessens the work the synchros have to do to match the speeds of the input and output gears. The Viper uses an aluminum flywheel—Johnson claims it's the only factory-installed one in North America—with about one-third less rotational inertia than a dual-mass cast-iron unit.

UNLIKE THE VIPER'S, THE GT350'S SHIFTER IS A SEPARATE PART BOLTED TO THE TRANSMISSION AND ATTACHED TO THE BODY THROUGH A FLEXIBLE CONNECTION TO ABSORB VIBRATIONS.

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Autonomy's Roadkill

THE PATH TO THE DRIVERLESS VEHICLE WILL BE STREWN WITH THE CARCASSES OF BIG INDUSTRY. *by Benjamin Preston*

AUTOMAKERS AND TECH COMPANIES alike seem to be pushing us toward an autonomous future in which streamlined, sustainable-bamboo-trimmed robotic taxis and luxury cruisers zip within inches of one another as they reel around turns and through crowded metropolises like pulses of light beamed through fiber-optic cables.

The bots won't crash as often as humans, but that doesn't mean they'll be infallible. The high-profile hacking of a Jeep Cherokee last summer calls attention to a particularly scary vulnerability in an interconnected web of self-drivers. And it's not hard to imagine far bleaker worst-case scenarios: All vehicles make an immediate hard left when Doctor Evil presses CTRL+L, and so forth. But long before we reach that level of dystopia, autonomous vehicles will prove to have their own negative social impacts. Here are a few:

▣ JOB LOSS

At the University of Oxford in England, the Oxford Martin School's Programme on the Impacts of Future Technology recently predicted that computerization would eliminate nearly half the jobs in the U.S. over the next 20 years. Autonomous vehicles may soon replace human drivers to our north. Development companies working Canada's oil sands plan to lay off thousands of off-highway mining-truck drivers by the end of the decade in favor of automated trucks that render human operators unnecessary. When autonomy expands to on-road services here in the U.S., some 200,000 taxi drivers and 3.4 million truck drivers will be at risk. Daimler, which owns the truck brand Freightliner, is already testing autonomous big rigs. In an interview with a German newspaper early last year, board member Wolfgang Bernhard predicted that production of such trucks is only "two, three years away."

Concept 26: A Dystopian Utopia

The auto industry's solution for distracted driving is to allow the person in the front-left seat to text or email unencumbered by vehicular responsibility. Named for the time, in minutes, of the average American commute, **Volvo's Concept 26** is a look at how the driver's experience might change when he or she transitions to chief passenger. In addition to a drive mode, it has two autopilot settings that rearrange the driver's furniture. In the optimistically named "create" mode, the seat and center console slide rearward, physically separating the driver from the controls—but not the centrally mounted tablet, which follows him rearward so he can do all the creative things one does on a tablet, but mostly create work emails. In "relax" mode, the steering wheel retracts, a cowl closes over the instrument panel, the driver's seat reclines, a leg rest deploys, and the passenger's side dash rotates upward to reveal a 25-inch screen—ostensibly so you can relax while watching *Pixels*, but really so your boss can claim that 26 minutes for teleconferencing.





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▣ MUNICIPAL REVENUE

City governments have long relied on revenue from parking fees and traffic citations. Researchers at the Brookings Institute point out that a driverless fleet obeying the letter of the law will cut into the billions that miscreants currently pay into public coffers. There's a pattern of slow governmental reaction here, says the Brookings team. "If you look at services like Uber and Lyft, most industries and local governments viewed them as passing fads when they first entered the marketplace," says Kevin Desouza, senior fellow for the Center for Technology Innovation at Brookings. "By the time they reacted, it was way too late and they were playing catch-up."

Merely streamlining parking, his team notes, can starve these revenue streams. In 2013, smartphone-operated parking meters, while good for consumers, led to a \$6 million decrease in ticket revenue in Washington, D.C., alone. It's not impossible to rethink taxes and fees, but establishing new ones when old ones are obsolete is a difficult political undertaking. Not many voters favor new taxes or fees, even if the old ones have gone away.

▣ INSURANCE INDUSTRY

Testing has shown that computers, which make few mistakes, are safer drivers than humans, who make plenty. That should mean lower accident rates in the future, a benefit to everyone. But while they're protecting drivers from catastrophic financial loss, insurers do a pretty brisk business. And they, too, will be adversely affected by the expected reduction in accidents.

KPMG, an insurance auditing company, released a report last summer that says, "The conversion to autonomous vehicles may bring about the most significant change to the automobile insurance industry since its inception." Fewer accidents implies lower premiums, and for insurance providers, less revenue. KPMG says the \$200 billion the auto-insurance industry collects in private and commercial premiums per year could end up shrinking by more than 60 percent. "There will be winners and there will be losers," says Jerry Albright, principal of KPMG's Actuarial and Insur-

**MAXIMUM OVERDRIVE**

Last spring, Freightliner was granted a license to test autonomous semis on public roads in Nevada. It joins Audi and Google, among others, though no other vehicle matches the terror factor of a sentient tractor-trailer.

ance Risk practice. "There will be fewer companies than there are today. The question is, who will survive?" (Don't feel too bad for your insurer; see "Ensuring Wrath," below.)

▣ MANUFACTURING

As driverless vehicles take root, futurists see autonomy reshaping the country as completely as did the automobile itself. Brian Johnson, director of equity research at Barclays Capital, says that autonomous vehicles shared across family and community lines will displace much of the current fleet of privately owned cars. Annual auto sales in the United States could decline by as much as 40 percent, and there would be a 60-percent drop in the total number of vehicles on the road. Driverless vehicles, using the same sort of technology that today connects Uber drivers with people needing rides, could be used to their maximum potential instead of sitting idle most of the time, as the majority of vehicles do today. Johnson predicts that Ford and GM, which have factories all over North America, will have to cut production by more than half as conventional vehicles cede the roads to autonomous ones.

Johnson, the Brookings researcher, and others all gravitate toward the conclusion that a major shift in the way we get around is on its way. The details—legal, social, and otherwise—will have to be figured out. Brookings' Desouza says a lack of preparedness and an unwillingness to accept autonomous vehicles will be the main reasons things won't go smoothly. [*Guilty as charged—Ed.*] KPMG's Albright agrees, pointing out that executives and government leaders would need to adapt to an economic shift that's already in the works. "Change is going to happen," he says. "It's going to come sooner than most people think."

Ensuring Wrath

A damning report released last year by *Consumer Reports* revealed that auto insurers use Big Data to learn their customers' credit histories and spending habits, relying more on those factors than driving history to determine premiums.

Insurance regulations, practices, and costs vary from state to state, but CR compiled more than 2 billion price quotes from every ZIP code in the country, finding consistently unscrupulous practices nationwide. In Florida, for example, a motorist with a clean driving record and excellent credit would pay an average annual premium of \$1409. The same driver with a poor credit rating would pay \$3826. Even with a drunk-driving conviction, a driver with excellent credit would pay an average of just \$2274.

It gets worse. In a practice called "price optimization," insurers gradually hike customers' rates if Big Data

indicates that they're unlikely to notice or look elsewhere for a better deal. If you're someone who never complains and tolerates unexplained rate hikes, you'll almost certainly pay—unless you live in California, Florida, Maryland, Ohio, Vermont, or Washington, states that currently ban the practice.

Consumer Reports called credit scoring a tax on the poor, pointing out that people who can't afford high premiums often go without protection against financial calamity. The National Association of Mutual Insurance Companies defended the industry thusly: "Low-income consumers already spend more on alcohol and tobacco products or audio and visual equipment and service than they pay for auto insurance." The Consumer Federation of America, an advocacy group, refuted that claim using figures from the federal government's most recent Consumer Expenditure Survey. By adopting such vitriol as a stance, insurers don't need CR to damn them. They're doing just fine themselves. —BP

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European Model Shown

by John Phillips

THE ULTIMATE ANTIVENOM.



As I write this, only 2687 current-gen Dodge Vipers have been produced since the car's last refurbishment in 2012. Maybe we should think of calling Sir Elton John. He could belt out another rendition of "Candle in the Wind," perhaps holding a deceased snake.

Fiat Chrysler might well pay for his performance, too, because Viper production will cease next year. The original Viper appeared 24 years ago and is now in its fifth generation. It's now almost pretty, rather than merely manly, with many of its Frankenstein flaws finessed. But now, of course, it's too late. It reminds me of the Pontiac Fiero, which debuted for 1984 as a plasticky turd and evolved into a fairy princess for 1988, just in time for GM to snuff it dead.

From day one, the Viper has always felt to me like using a Louisville Slugger to play ping-pong. The results, while interesting, have been clumsy. Not that it was always the car's fault. I drove a Viper to a Detroit Tigers game and got food poisoning. I drove one to southern Ohio where late tech editor Don Schroeder steered it into a ditch, flattening one side exhaust into the thickness of an envelope. I drove one to a Mugg & Bopps in Gregory, Michigan, where a Hells Angel angrily asked: "You work at *Car and Driver*? I don't know who you are, but I recognize your dog." At Grattan Raceway, I got a Viper sufficiently airborne, then backed so far into a turn that it took me 15 minutes to stop shaking. I had a girlfriend refuse to climb back into a Viper after she burned her leg on the side exhaust. In a tribute to that particular heated exchange, photographer Aaron Kiley and I cooked bacon and eggs on the doorsill and popcorn over a hood vent, prompting then-Chrysler COO Wolfgang Bernhard to ban me from all further Mopar machinery. I was mortified, but his ban fizzled when he comprehensively deep-fried his own career.

Bad juju for him, too.

You know what? I even blame the Viper for giving Plymouth the confidence to build the retro faux hot rod that was the Prowler, a car I always felt had been so hor-



► **How could you not love a face like that?**

rible on Chrysler's own proving grounds that they released the thing prematurely so they wouldn't have to drive it anymore. In fact, if I were married to a Viper and had to listen to that blatty-blatt mouth every night, the two of us would be divorced, with dual 100-mile restraining orders.

I don't mean to be cruel, but the Viper began as a rough-and-tumble Dutch oven of a kit car. "It's all about back to the basics," we were told. But so is wearing suspenders. When I first drove that 1992 Viper, it felt like one of Bill Thomas's

Cheetahs, with its drivetrain open to the cockpit and with decent HVAC available only if the windshield collapsed.

While the Viper was reporting to its various parole officers, the Chevy Corvette kept getting more and more user-friendly, with a cockpit that eventually could have served duty in an Impala. Yes, this last-gen Viper's interior is all leathered-up and full of Easter eggs—designed by an honest-to-God European, no less—but the interior was of Iacocca K-car quality in all earlier attempts. And now a Viper is a \$90,000-plus proposition, which must be herding buyers toward Audi R8s and Nissan GT-Rs and Mercedes-AMG GTs, and, uh, maybe even either of the Hellcats. Heck, a new Porsche 911 can be had for just over \$90,000. Any of those competitors will serve as a commuter. The Viper will serve as a commuter only if you ride in the truck that's hauling it.

You know why there's no Viper automatic? Because "the cost of developing it . . . would have equaled the cost of the whole program," confessed design chief Ralph Gilles three years ago. That's like hearing your dad say, "We can't afford the baseball game, but I can buy you a box of Cracker Jack."

And, of course, the Viper has always been expensive to build, what with an engine that takes 2.5 hours to assemble, followed by a 42-minute dyno run-in.

When Fiat Chrysler supremo Sergio Marchionne first drove the last Viper, he returned in 15 minutes—maybe his sweater caught fire—then said to Gilles, "Ralph, that's a lot of work." He meant that it was a brutal car. Of course, Viper enthusiasts have always preached, "We never wanted the car to be as sophisticated as a Corvette." What goes unsaid is that Chrysler never had the cash willpower to get there anyhow.

It's easy to criticize cars, which explains my career. It's terribly hard to build one, and the Viper sure was an astonishing line drive to the draft drinkers in the upper deck. Maybe it will return, as it did two years after Chrysler flushed its cash box and held a party for the Italians. If the car returns, will it be an SRT or a Dodge again? Come on, just find a name and stick with it.

When Carrie Fisher was married to Paul Simon, the two got into a ripper of an argument on the way to the airport. Fisher said to Simon, "You'll feel bad if I crash."

Simon replied, "Maybe not." ■

Introducing the new V1

**V1 rarely changes on the outside.
Can you spot what's new? ***

NOW



Can you spot the difference?



► **ESP added to enable info sharing with auxiliary devices.**

Can you spot the difference? **



► **Longer range: warning distance increased on Ka-band.**

Can you spot the difference?



► **Laser warning redesigned to fit within original-height case.**

Can you spot the difference?



► **New LED display identifies each of four bands: X, K, Ka and laser.**

Can you spot the difference?



► **Front and rear laser-warning added; requires taller case.**

Can you spot the difference?



► **V1 debuts with radical new feature—the Radar Locator.**

1992

The first V1 detail you see—the Radar Locator:
It's a Valentine One invention. Where's the radar?
Or laser? A red arrow points to the source.

But you can't see "Continuous Improvement."
We don't do model changes. Instead, when we
have a new trick, it goes into V1 immediately.

All new components inside. Over the years, our
engineers have made 26 major performance revs
inside V1. In effect, they've changed everything.
We want our customers to get our very best
ideas as soon as we can build them.

Our newest trick we call Junk-K Fighter. Like
most of V1's improvement, you can't see it. It's
a software algorithm that recognizes unthreat-
ening K-band alerts and preemptively excludes
them. You won't hear a thing. Our customers call
it a breakthrough.

Junk-K Fighter is built into every new V1.
Can we build one for you?

*Answer: Nope, Junk-K Fighter is a software algorithm.

**Answer: Nope, but V1 owners sure know it's there.

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by Ezra Dyer

AND NOW A MESSAGE FROM THE 13TH FLOOR.



As the CEO of Frigwell Motors, one of the more hallowed names in the car business, I'd like to address a few issues brought to my attention in recent weeks. It seems our company made some errors in judgment that led to problems on the manufacturing side, and the regulatory compliance side, and the safety and quality and performance sides. I'll get to all that. But first, who do you think's gonna win the big game? I know that right now, when this press release is going out, it's 3 a.m. the night before the Super Bowl. That's simply the only time we were able to send it, and I hope that our news, which is really important for our customers, shareholders, and bail bondsmen, doesn't get subsumed in the background noise of America's biggest media event. That would be a real shame.

Incidentally, we do have a commercial running during the game. It depicts our new truck, the Hyena 3x4, driving up Mount Everest while towing all our competitors' trucks. We actually did that, and it cost \$238 million. Early reviews are calling our spot "the E-Trade monkey of 2016" and "an environmental disaster." But enough bragging. It's time to talk about where we went wrong and what we're going to do about it.

In the automotive industry, consumer trust is at an all-time low, with a seemingly endless series of scandals stretching back over the past decade or more—Firestone, GM's ignition switches, Takata, VW's diesel emissions, and whatever it was with Toyota. (Floor mats? Sure.) Then there are Chryslers getting hacked and Frigwells with radioactive ore in their frame rails. I think we can agree that everybody makes mistakes. Except Volvo, those goodie-goodies.

Kiss-up Swedes aside, there seems to be no end to the recalls and scandals. The bottom line is that it's hard to make vehicles that don't catch fire or contain toxic mold or emit dangerous levels of gamma rays. Think about all those hoverboards that are blowing up. If a simple device like a hoverboard has so many problems, imagine what we're up against when building cars. One day you've got the greatest product in the world, the next you've got

"One day you've got the greatest product in the world, the next you've got 'a horn that causes piping plovers to stop mating.'"

"a horn that causes piping plovers to stop mating." People just love to pile on.

So allow me, if I can, to put a face to the company that the media has so gleefully demonized. To more than 10,000 people, we're a job creator—I'd say "employer," but our attorneys tell me that our workforce is predominantly comprised of free-lance manufacturing consultants and that, technically, Frigwell has only three employees. They work for our parent company, Frigwell Hair and Nails, a salon located in the Cayman Islands. I've never

been there, but it must be small because the whole thing's in a post office box! Our cargo ships, which deliver new cars around the world, are registered in Somalia. They call it a flag of convenience, but I tell you, it's been anything but.

One of those ships is on its way back to port. The Frigwell Mundera R, America's bestselling four-door three-wheeled pickup for eight of the past 11 weeks, will get a reflash of its navigation system. Currently, there's a glitch where if you do a POI search for ice cream, you're automatically entered in the nearest UFC cage fight. We're sorry about the bug, though several owners have won substantial prize money.

The Mundera is, unfortunately, not our only headache. We're also recalling the Lectrocutioner, our full electric sedan, after independent researchers discovered that it's actually powered by a Ford 460 and that its fake engine noise is, in fact, real. By Q2 of this year, we'll be reintroducing the car as the Lectrocutioner-G, the world's first electric car with full gasoline backup. Our engineers assure me that the battery, a deep-cycle DieHard, provides an industry-leading 390 miles of range after it's used to start the engine.

Well, I think we've about covered it. I know customers are angry, but believe me, so are we. A few months back, I was a mess, worrying that this was all our fault. Then I got Porsche's press release—which, funny timing, went out the night before Thanksgiving—and read about how its emissions debacle was actually Audi's fault. It was like, "We're mad about this, and we're gonna take it up with the villainous company that made those stinky engines: Audi." Porsche blaming Audi for noncompliant engines is like your stomach blaming your mouth for eating Fiery Doritos Locos Tacos. That said, I'm disappointed in our own completely independent suppliers, including Frigwell Lightly Distorted Glass, Frigwell Ungalvanized Steel, and Frigwell Whoopie Cushion and Supplemental Restraint.

As CEO, I take full responsibility... for finding out who's responsible for all this. I suspect it was Joe in accounts receivable, but rest assured I won't stop my investigation if it takes five, seven, or even infinite years. It potentially might take so long that people forget about the whole thing. In the meantime, we've begun to offer a \$300 "We're Sorry" rebate on any new model affected by an unresolved lethal defect. It's looking like a record year. ■

blu PLUS⁺ works for me

"blu PLUS⁺ gives me
everything I was
used to AND more."
-Brad



"See My Story" At:
www.blucigs.com/plusworks

- + Real Draw
- + Maximum Hit
- + Big Flavors

by Aaron Robinson

YOUR CITY'S TRAFFIC DOCTOR PROBABLY CAN'T CURE WHAT AILS IT.



Steve Finton worked in storm-water treatment, then became the traffic-engineering manager for Torrance, California, one of the larger independently incorporated cities within greater Los Angeles. In general terms, Finton's job is the same as before: Maximize flow through the pipes. If you live someplace of any significant size, there's a Steve Finton on your payroll, no doubt also trying to push more load through the existing plumbing. I live about a mile from Finton's office, and I've spent the past 11 years driving around Torrance wondering what witless car-hating commissar designed the traffic system. There seem to be no priority streets in our seaside grid, the commuters evoking quantum physics by racing from red light to red light in short bursts of

quickly dissipated energy. Crenshaw Boulevard, a name synonymous with riots but a reality of modest commercial and residential tracts, limps from one red-hued thrombosis to the next until it finally reaches its southern terminus at a lovely little park overlooking the Catalina Channel—a park that is rarely visited because people expire of old age or brain explosion before reaching it.

Figuring that there were actual reasons it must be this way, I went to see Finton, a lanky bicycle enthusiast who nonetheless drives to work every day from neighboring Redondo Beach. He was sympathetic to my exasperation. "Everybody is a traffic engineer. We all drive the same roads; we all see the things that drive us crazy." Facts hampering Finton's efforts to make traffic move more smoothly: The Romans were long gone when L.A.'s city fathers decided to comb the ranchos into fine grids. There's a good reason your body's circulatory system is not a grid; it's a recipe for flow constriction and blood clots. Sadly, nobody thought of traffic circles then (or, indeed, traffic).

Also, Finton, as with many local traffic engineers, doesn't have full authority over his own grid. Three of the busiest thoroughfares in Torrance are state highways maintained by the state's transportation agency. They cut right through the heart of the city, affecting the traffic flow on virtu-



► Torrance's Dr. Traffic, Steve Finton, has his hands full.

ally every cross street. If Finton wants to change the signal timing of those streets, he has to jump into the gears of a whole separate bureaucracy.

This matters because traffic engineers start out with a basic time-versus-distance graph to plot signal timing. Finton drew a sample for me. On the vertical axis is time, on the horizontal axis, distance, with markers created by signaled intersections. In a perfect world, each "platoon," or slug of cars released by a green light, should make an unimpeded 45-degree march

across the chart, hitting each successive intersection just in time for the green. A signal's cycle clock is divided into sectors. Thus, left-turners get so many seconds, cross traffic so many seconds, and so on. "All you want to do is clear the queue," says Finton, meaning that nobody has to wait through two reds. Leftover green time, if any, goes to the busiest street. The clocks are constantly tweaked.

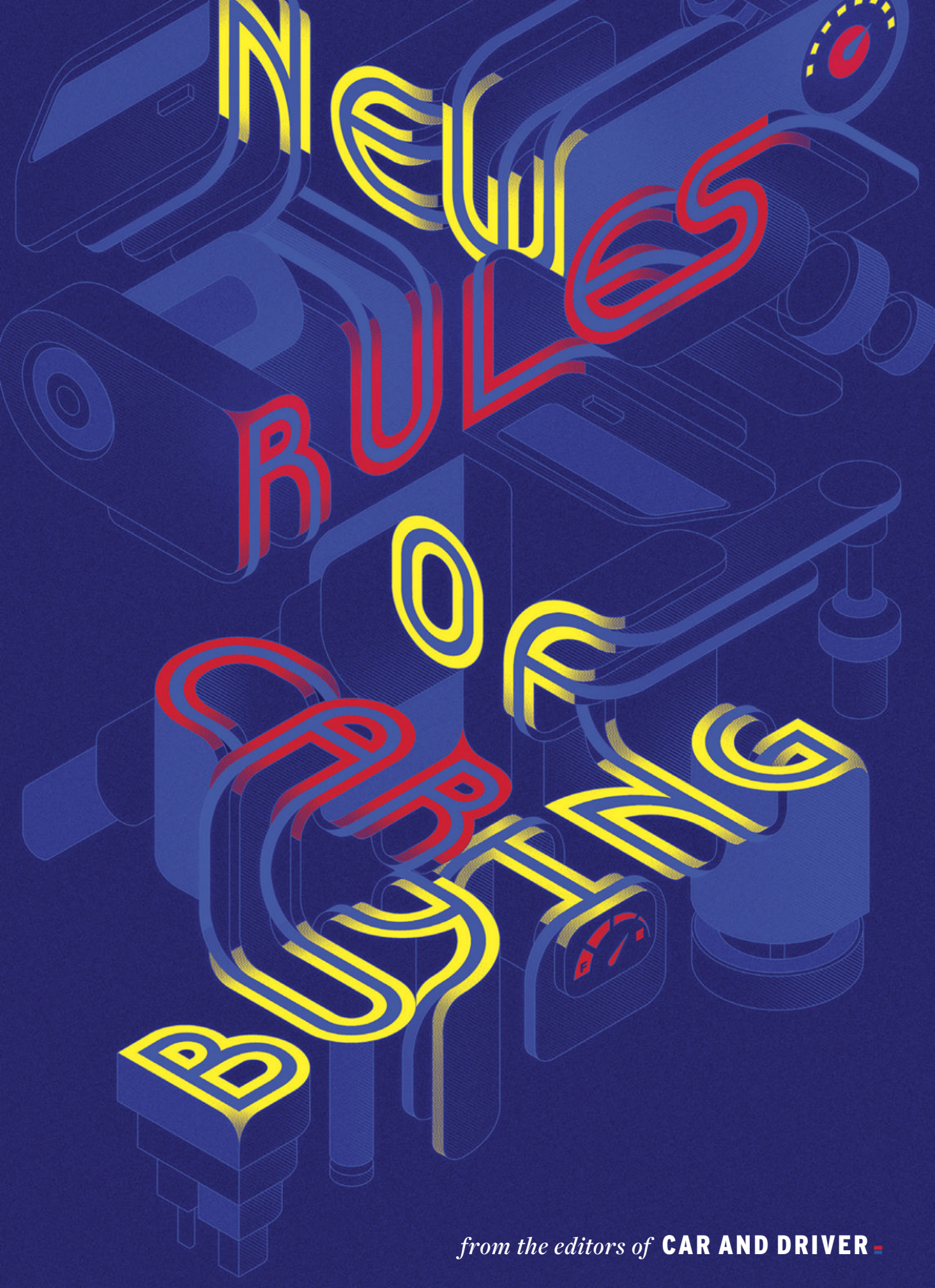
The problem, of course, is that the world is imperfect. The signals are not always evenly spaced, cross-street traffic is out of sync for some reason, the traffic is not evenly distributed, signal "sneakers" delay the platoon by shooting through under red, and pedestrian crosswalks can foul up the whole chart. Their use is unpredictable, and the national standard of four feet per second for pedestrians has dropped to 3.5 feet, acknowledging age and disabilities.

Then there are the intersections with those state highways. If I turn left from my Torrance-controlled street onto a state highway, I go from one light sequence to another and am likely out of phase until I can form up with a platoon. Then there are the cellphone users who go comatose at the wheel. Cellphone delay is so pervasive that Finton and his colleagues have considered adjusting the underlying assumptions about traffic behavior.

Smarter signaling, which began in the mid-1990s with the first computerized signal controllers, can now adjust for variations in traffic flow by sensing cars on inductive pads cut into the asphalt and also by "seeing" them with cameras. But they have to be reprogrammed manually. The city is moving to a new controller that can be remotely reprogrammed from a command center. But like every publicly funded infrastructure project, progress is slow. Finton has been working for years on a project to fix an intersection logjam with additional turn lanes.

Much of the \$18 million cost will go to relocating utilities and acquiring the property needed to widen the street. With road projects, nothing is ever quick or cheap.

Torrance packs 356 miles of streets and 119 traffic signals into 21 square miles. Like the rest of overcrowded Southern California, it is a city with arterial hypertension. Head in hand, Finton looks at the map and mutters, "Yeah, Crenshaw is a mess." As the doctor, all he can do is try to make the patient a little more comfortable until something better comes along. ■



from the editors of **CAR AND DRIVER** -

NEW RULES



of CAR BUYING

There are few truly bad vehicles for sale today, but, when there are more models boasting more whistles and bells than ever before, that doesn't make car shopping easy. Even if you're car savvy, you can still make an uninformed choice or get a bad deal. And the wealth of resources for information can obscure the fact that many of the rules of the game have changed. But fear not: We can help. We've spent months researching the changing auto-retail landscape and have collected the best advice here. As new ways of shopping supplant the old, those in the know can save time and money and get greater enjoyment out of their new car.

- starting line -

RESEARCH

OLD Spend a Saturday kicking tires on dealership row to decide what you want.

NEW Stay home, do your research online, and only visit dealerships for test drives.

ADVICE There are many ways to research new vehicles online, from magazine websites such as caranddriver.com to the automakers' own sites. The volume of information is staggering. Consume the info, take notes, make a spreadsheet if that's your thing—but do it before you head out to shop. When you reach the dealership, make the test drives count. A quick spin down the street and back won't suffice. Don't be shy about putting a few miles on the car, getting it up to freeway speed, and driving it on familiar roads. If a salesman insists on accompanying you, politely ask him to be quiet so you won't be distracted. Pay attention to details. You're going to spend thousands of miles in your new car, so those first few logged on a test drive are important.

- monthly nut -

BUDGET

OLD Stretch your budget to get a nicer car by leasing.

NEW Consider a lightly used car, especially a certified pre-owned (CPO) one.

ADVICE Leasing gets you into a nicer car than you probably thought you could afford, but it comes at a cost. You're not actually buying anything when you lease; you're paying the difference between the sale price and the car's forecasted end-of-lease residual value plus interest and fees. A wise

alternative is to buy a relatively new used car, letting the original buyer pay the initial chunk of depreciation, which is the biggest hit on a percentage basis.

The sweet spot tends to be a three-year-old car that's just been turned in from lease. You can get a car that's nearly identical to the current model year's, but at a price that's chopped roughly in half. CPO vehicles even come with extended warranties or service contracts for peace of mind.

AVERAGE NEW 2016-MODEL-YEAR VEHICLE MSRP

\$32,848

\$16,341

VALUE IN THREE YEARS

AVERAGE NEW 2016-MODEL-YEAR LUXURY-VEHICLE MSRP

\$56,386

\$29,159

VALUE IN THREE YEARS

Data provided by TrueCar

QUICK TIPS • **DO:** Ask friends and family for recommendations of good dealers and salespeople. • **DON'T:** Let a small difference in price sway you into buying a car you don't really want or from people you don't really like.



2016

Corolla S

Clutch in. Boredom out. It's time to put the fun back into driving. The 2016 Corolla brings even more excitement to your drive, thanks to an available 6-speed manual transmission. Stir the driver in you.



- time to choose -

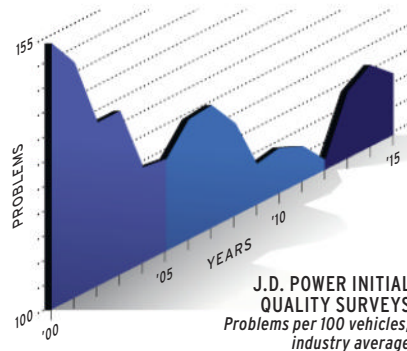
PERUSE

OLD Play it safe and only buy on a carmaker's quality reputation.

NEW Consider the flattening trend in new-car-quality surveys.

It may not be worth paying extra for a brand because it has the highest quality score.

ADVICE J.D. Power's quality awards and the surveys that create them are frequently used by automakers as advertising cudgels. But what those proud carmakers often don't mention is that quality is up across the industry. Yes, there are some brands that do spectacularly well and some that do quite poorly. In 2015, the worst brand in the J.D. Power Initial Quality Survey, Fiat, had more than twice as many problems per 100 vehicles as Porsche, the best brand. But only 12 problems separated the 6th through 15th brands, and those brands were still above the industry average of 112 problems. Remember, J.D. Power's quality surveys are like college-basketball polls: Don't trust them implicitly. They report owner dissatisfaction with features as quality problems. And they don't guarantee that a new car will be problem-free. So consider the quality scores, but don't write off the brands that are a few places off the pace, especially if you can get a good price on the car you like.



OLD Look for last year's model to get a killer deal.

NEW Wait for a redesigned model. The rapid pace of technology means it's likely to offer more features and better fuel economy.

ADVICE This is where doing your research pays off, as any deal on a leftover from last year needs to be weighed against other factors. The first is whether the discount is greater than the loss of value the car has already suffered while it was waiting for you to drive it home. When it comes time to trade it in or sell it, the car is still going to be that one-year-old model, which will make it worth less. The depreciation can be exacerbated if the automaker added new features after it built last year's version. This makes it important to know when the automaker is going to overhaul the model you're shopping for. Most vehicles have a life cycle of four to six years before they get substantially reengineered. Sometimes a mid-cycle refresh can bring updates even sooner, and these plans are often reported well in advance. Knowing there's an improvement coming soon will better inform your purchase.

OLD Buy a new car when your old one wears out.

NEW Start shopping before you need a new car to make a more informed decision and save money.

ADVICE For most people, cars are the second-largest purchase they'll ever make after their home, and similar care should be taken in the buying process. Not feeling pressured to close a deal means you can take advantage of opportunities that arise at the end of the month or the end of the quarter. That's when dealers can get desperate to move the metal, either to secure bonuses from the automaker for meeting sales goals or to avoid paying inventory costs. If you need to replace a car quickly, consider renting something for a week to give yourself time to research and shop. It will be money well spent if you get the right car at the right price. Buying the wrong vehicle and replacing it later will cost much more because of depreciation, taxes, and transaction costs. And the only other alternative is suffering for years with a car you don't like.

QUICK TIPS • **DO:** Spend enough time researching the car market, especially if it's been a while since you last shopped.
• **DON'T:** Rely on old stereotypes. The auto industry has changed a lot, even in the past five years.

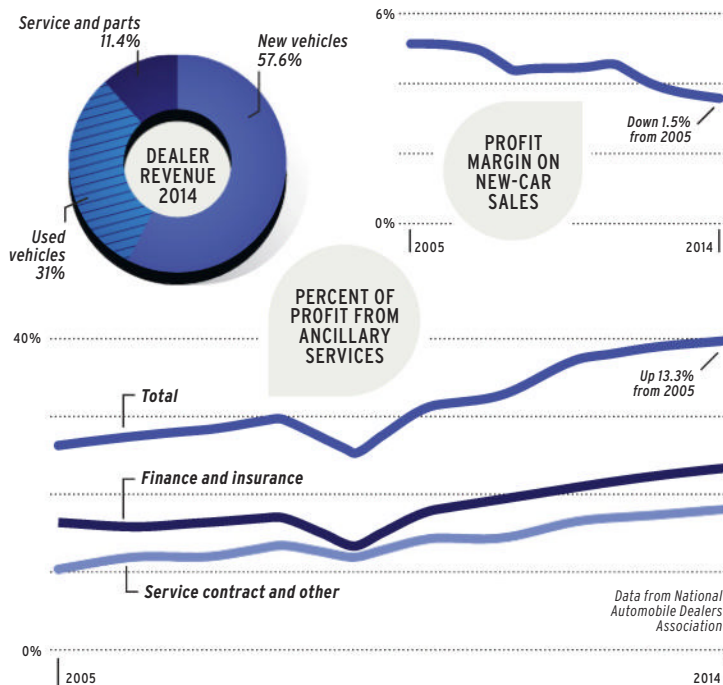
- don't hate -

NEGOTIATE

OLD Threaten to walk out if you don't get your way.

NEW **Get thrown out if you're unreasonable in your demands.**

ADVICE While you should always be prepared to leave the dealership if the deal is not right, remember the No. 1 rule of any car-buying negotiation: Don't be a jerk. You catch more flies with honey, and the store has to make some sort of profit or they aren't going to do the deal, no matter how many TrueCar printouts you wave at them. Understand that pricing transparency means many dealers earn less profit from selling new cars than they previously did. When you come armed with the invoice price and refuse to budge, the dealer will need to make his money on some other aspect of the sale, such as financing or your trade-in.



OLD Suffer through hours of dickering to get that last \$100 discount and free undercoating.

NEW **Be straight with your salesperson about what you want and how much you're willing to spend.**

ADVICE Come to buy armed with knowledge about options and equipment and how much other dealers are selling your car for. If you know what you want and what it's worth, you won't be forced to waste time as the dealership tries to sell you a car with option packages you don't need. Make sure when it comes time to take delivery of your new car that you have all your paperwork in order. The salesperson probably gave you a checklist: proof of insurance, cashier's check, identification, or whatever the state in which you are buying the car requires.



*AutoTrader.com study

- say buh-bye -

TRADE IN

OLD Make your deal on the car, then spring your trade-in on the salesperson.

NEW **Get a trade-in offer first, or better yet, sell your car yourself.**

ADVICE A good salesperson is going to ask about your trade-in the minute you show interest in a new car. Not just because she has to factor it into

the deal, but because dealers want to take good cars in trade; trade-ins fuel the profitable used-car side of the dealership. Dissembling about your trade can blow up the deal, and deception is never the best path to getting a reasonable offer. If you want maximum value for your old car, sell it yourself or take advantage of a service that will do that for you. If you prefer the convenience of trading in your car, letting the salesperson make an upfront offer means she's in the position of having to make her best offer to try to secure your business.

QUICK TIPS • DO: Negotiate the price of the car, not the payment. • **DON'T:** Overspend. Include everything when estimating your car budget: payment, insurance, gasoline, and a small amount set aside every month for repairs.



“Question anything that doesn’t seem right.”

- find a source -

FINANCE

OLD Cash is king. Offer to pay cash to get a better deal.

NEW Arrange your financing through the dealership.

ADVICE The dealer can often get you financing as good or better than your local credit union or bank can, with the dealer still making something off the markup, or “reserve,” on the interest rate. If the dealer can earn a profit on that end of the deal, you may be able to negotiate a lower price on the car. That said, it doesn’t hurt to know what rate your local lender can offer you before heading to the dealership. As interest rates partly depend on your credit history, take advantage of services that supply, at no cost, your FICO score (a common credit rating) and put your financial house in order before applying for a loan.

OLD Refuse anything the finance-and-insurance person offers, even a glass of water.

NEW Listen to what he or she is selling. Some types of optional warranty coverage make sense.

ADVICE Before you pass on tire, wheel, and key coverage, consider that replacement keys can cost hundreds of dollars. If you’re prone to losing them, find out what a new key for your car costs. With today’s do-it-all remote proxy keys, it might be a lot more than you think. Other service contracts are less attractive, and if you decide you want to purchase one, you can do so later, after you have the car. You should still be wary of extras, so make sure you fully understand every line of your sales contract. Question anything that doesn’t seem right, and be prepared to negotiate on extra charges such as “documentation.” Documentation fees are a common way for dealerships to pad profit, but they can vary widely from store to store. Under no circumstances should you sign any document that you haven’t read closely.

COST OF REPLACEMENT KEYS



BMW 7-SERIES
DISPLAY KEY

TESLA MODEL S
KEY FOB

FORD MUSTANG
MYKEY

- CYA -

INSURE

OLD Call your insurance agent the morning you go to pick up your new car to have your policy transferred.

NEW Get insurance quotes upfront, before you make any deal at the dealership.

ADVICE Note that we wrote quotes, plural. Not all insurers use the same standards for evaluating risk and setting rates, even when it comes to how long they hold tickets and accidents against you in assessing surcharges. Sadly, the best way to save on auto insurance is to switch providers, so call around. Or use thezebra.com to gather multiple quotes without revealing all your personal details.

QUICK TIPS • DO: Contact dealers via email. It’s more efficient and creates a record of the negotiations.
DON’T: Buy a car just because it wins awards. You have to drive it, probably for a long time. Make sure you love it.

THE ALL-NEW **PRIUS**

CUT THROUGH EXPECTATIONS

Dramatic meets aerodynamic in the all-new 2016 Prius. Its sleek design turns heads, but is nearly invisible to wind, with a drag-reducing active grille shutter, a built-in spoiler, lowered hood and more, creating a quieter cabin, more stable drive and an air-cheating .24 drag coefficient. The result is mpg that doesn't just defy expectations, it shatters them.



THE ALL-NEW RAV4 HYBRID

HOW FAR WILL YOU TAKE IT

The road to adventure takes many forms, and the all-new RAV4 Hybrid helps you explore it all with class-leading mpg¹. Toyota's proven hybrid powertrain compromises nothing, serving up more horsepower² for thrilling acceleration. And when you need additional traction, the Electronic On-Demand All-Wheel Drive with intelligence (AWD-i) delivers power to the rear wheels. The all-new RAV4 Hybrid: the only choice, whichever adventure you choose.



Let's
Go
Places

Prototype shown with options. Production model may vary. 1. 2016 EPA-estimated 34 city/33 combined mpg for RAV4 Hybrid. AWD-i models only. Actual mileage will vary. 2. When compared to 2016 RAV4 gas models. ©2015 Toyota Motor Sales, U.S.A., Inc.

THE ALL-NEW TACOMA



**Let's
Go
Places**

SOME SEE AN OBSTACLE. OTHERS SEE A WEEKEND.

The all-new 2016 Tacoma elevates your epic adventures, thanks to first-in-class off-road technology. The Multi-terrain Select system in the TRD Off-Road features five driver-selected modes that help you take on tough terrain such as loose rock, mud or sand. The system regulates wheelspin by adjusting throttle and brake pressure to provide maximum traction and maximum fun. About the only thing Tacoma can't help you select is the best way to get back down.

Prototype shown with options. Production model may vary. ©2015 Toyota Motor Sales, U.S.A., Inc.



HIGH- DRIFT



WITH A MUSTANG
ENGINE, FOUR-WHEEL
DRIVE, AND A DRIFT
MODE, FORD HAS
TURNED THE PLAIN-
JANE FOCUS INTO A
FIRE-BREATHING
SQUIRREL. *by Mike Duff*

PLAIN ER

FORD FOCUS RS

photography by Greg Pajo



W

e understand if you have not heard of the small Belgian town of Lommel. It's sufficiently obscure that many Belgians are probably unfamiliar with it, too. Lommel is tucked tight against the Dutch

border in the forested hinterland that connects these two waffle-loving nations and is notable for just two things: first, the distinction of having more dead inhabitants than live ones, as it's the location of one of the largest German cemeteries of World War II; and second, for the one that brings us here, the top-secret Ford test track that sits just east of the cemetery.

Ford was drawn to Lommel for exactly the same reasons that everybody else wasn't; where better for an automaker to situate its principal European validation center than the most boring corner of the continent's most boring country? The Lommel Proving Ground is 800 acres in size, surrounded by tall evergreens and the sort of fence normally used to keep maximum security inmates incarcerated. It contains 50 miles of tracks, including a high-speed oval with 28-degree banked turns and "Route 7," a dynamic course that incorporates replicas of senior Ford engineers' favorite real-world corners. But for today, the camo-clad prototypes that ply their trade at Lommel have mostly been banished to allow for the presence of unwashed journalists, here for an exclusive first drive in the new Focus RS, several months before its official launch.

The RS probably needs less introduction than the test venue. Ford hyped its four-wheel-drive, 350-hp hatchback for nearly all of last year, most recently with a viral video campaign featuring almost as many episodes as some HBO dramas. As with the two previous Focus RS models, it has been engineered primarily in Europe. But unlike them, it will be sold around the world, with U.S. sales due to start this year for the previously announced price of \$36,605. Anticipation for the car has already reached

▼ SPECIFICATIONS

VEHICLE TYPE: front-engine, 4-wheel-drive, 5-passenger, 4-door hatchback
BASE PRICE: \$36,605

ENGINE TYPE: turbocharged and intercooled DOHC 16-valve inline-4, aluminum block and head, direct fuel injection

DISPLACEMENT: 138 cu in, 2261 cc

POWER: 350 hp @ 6000 rpm

TORQUE: 350 lb-ft @ 3200 rpm

TRANSMISSION: 6-speed manual

DIMENSIONS

WHEELBASE:

104.3 in

LENGTH: 172.8 in

WIDTH: 71.8 in

HEIGHT: 58.0 in

PASSENGER

VOLUME: 91 cu ft

CARGO VOLUME:

20 cu ft

CURB WEIGHT:

3400 lb

PERFORMANCE

(C/D EST)

ZERO TO 60 MPH:

4.6 sec

ZERO TO 100 MPH:

11.9 sec

1/4-MILE:

13.2 sec

TOP SPEED:

165 mph

FUEL ECONOMY

(C/D EST)

EPA CITY/HWY:

17/23 mpg

the supercritical, pre-stroke stage.

The man in charge of the RS project is American, and he joined us in Lommel to introduce the car. Tyrone Johnson is a 30-year Ford veteran who has spent the last 20 years working in Europe, now as Ford Performance's vehicle-engineering manager. He's also the guy who pushed through the decision to make this Focus RS four-wheel drive; both its predecessors sent their prodigious engine output exclusively through the front wheels.

The RS uses a rear axle developed by British company GKN. It features a constantly turning prop shaft, like a Haldex system, driving a separate electronically controlled clutch for each rear wheel. These clutches can lock in just 0.06 second, replicating a traditional limited-slip differential and providing torque vectoring across the rear axle.

The engine is basically the Mustang EcoBoost's 2.3-liter turned transversely and tweaked to deliver more power. It has a twin-scroll turbocharger, high-tensile cast-iron cylinder liners to deal with higher boost pressures, and a new cylinder head that is cast by Nemak and machined by Ford. The exhaust has no intermediate silencers, just a rear muffler with switchable acoustic flaps. And we've been assured that the engine has been tuned to rev harder than the tight-feeling Mustang.



037



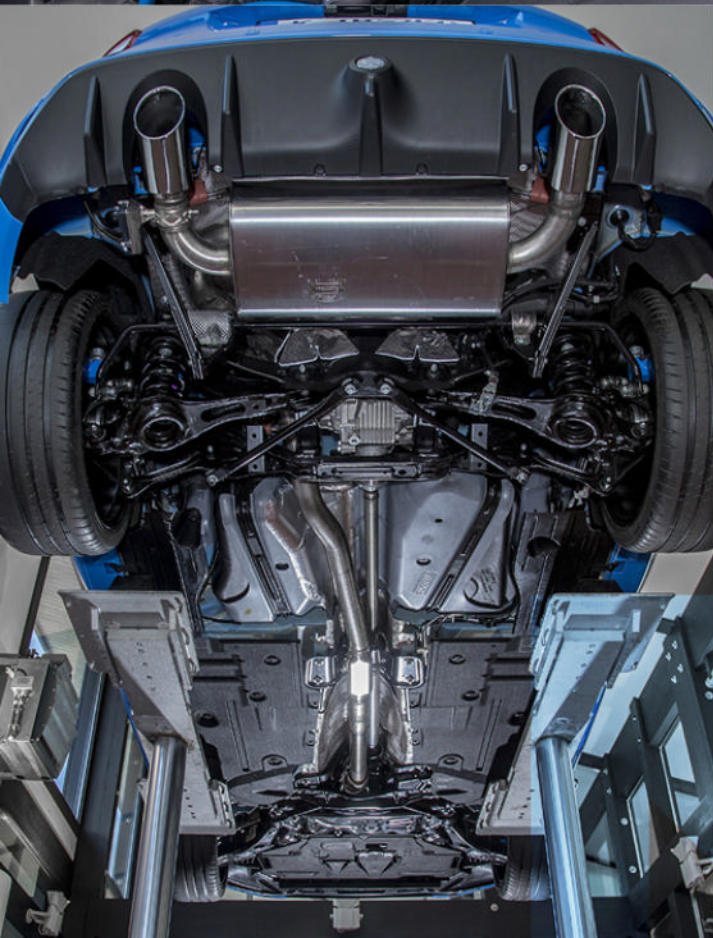
NO, NORTHERN BELGIUM DOESN'T LOOK LIKE DUSTY SOUTHERN CALIFORNIA. OUR DRIVE WAS IN EUROPE, BUT OUR PRIMARY PHOTO SHOOT WAS IN SOCAL.

The other technical highlights can be condensed thusly: The RS has variable dampers as standard, controlled by the "Drive Mode" selection switch but also overridden by a button integrated into the turn-signal stalk. The spring rates are firmer than the Focus ST's, and the brakes are bigger, with 13.7-inch front rotors gripped by four-pot Brembo calipers. The RS also loses the ST's variable-ratio steering in favor of a fixed-ratio rack.

For all that's new beneath the surface, most of the RS will be familiar to anyone who has seen a Focus ST. Yes, the body kit is more muscular, with an ultra-aggressive hatch wing and big intake apertures set into the front bumper protected by fine, motorsports-style mesh. The RS has its own black aluminum wheels and the option of the bright-blue paint work you see here. But could you really distinguish an RS from an ST from across a dimly lit street at night?

It's the same deal in the cabin. There are RS graphics and blue trim; the red zone on the rev counter sits fractionally higher than the ST's; and next to the gear selector is a control panel for the four switchable dynamic modes. Otherwise, very few changes.

With free rein over Lommel's twistier routes, our first instinct regarding our brief drive—as we imagine yours would be—is



C/D UNDERBELLY

TO ENABLE REAR TORQUE VECTORING, THE RS IS GEARED SO THE REAR WHEELS WOULD ROTATE 1.8 PERCENT FASTER THAN THE FRONTS IF THE REAR-AXLE CLUTCHES WERE FULLY ENGAGED. THEY NEVER DO COMPLETELY MESH, THOUGH, BECAUSE THAT COULD GRENADE THE DRIVELINE. INSTEAD, TORQUE IS DISTRIBUTED SIDE TO SIDE BY PARTIALLY ENGAGING THE CLUTCHES.



“DRIFT MODE SHOULD CERTAINLY HELP WITH THE CREATION OF PLENTY OF ‘HEY, WATCH THIS!’ YOUTUBE BLOOPERS.”



to thrash the RS like a stolen donkey. But with a Ford chaperone sitting in the passenger's seat, and evidence of how slippery the rainy track has become already delivered by the sight of another RS prototype buried in a gravel trap, we opt to start sensibly.

Under gentle use, the RS does a very good impression of a louder, firmer, and slightly grippier ST. The engine has a brawnier soundtrack, and there's noticeably more lag from the bigger turbocharger at lower speeds. Initially, it doesn't feel like the sort of fire-breathing squirrel the notion of a 350-hp Focus might conjure.

Indeed, the most noticeable dynamic difference is actually the fixed-ratio steering. The RS feels less scalpel-sharp on initial turn-in but more natural in longer bends. You won't hear any complaints here about the sole transmission choice being a six-speed manual. The shifts can't match the speed of a dual-clutch, and the estimated zero-to-60-mph time of 4.6 seconds suffers, too, but the shift action is crisp and accurate and the pedal weighting is natural and progressive. Johnson hints that an automatic version may follow if demand arises from the parts of the world where people refuse to change their own gears.

It is at bigger throttle openings that this sharper Focus comes into, ahem, sharper focus. Once the turbo is spinning hard, the RS's engine revs with far more enthusiasm than the Mustang EcoBoost's, pulling with undiminished zeal all the way to the 6800-rpm cutoff. Lifting off produces a fusillade of pops and bangs from the exhaust. It's an engine that, unlike those of many rivals, isn't trying to hide being turbocharged. Rather, it celebrates the fact. It's far ballsier

FAMILY TREE

MORE THAN 40 YEARS' WORTH OF FORD'S FORBIDDEN FRUIT.



SIERRA RS COSWORTH

YEARS PRODUCED: 1986-1992
POWER: 204-224 HP

Built to homologate race and rally variants of the Sierra, this RS used a Cosworth-developed 2.0-liter turbocharged four-cylinder that made it one of the quickest hatchbacks in Europe. The quest for rally success led to the development of a four-wheel-drive sedan version, the Sapphire RS Cosworth.



FOCUS RS (MK1)

YEARS PRODUCED: 2002-2003
POWER: 212 HP

With the link to motorsports homologation broken, Ford was free to create a front-wheel-drive performance version of the first-generation Focus. Power came from a turbocharged Zetec engine and reached the road through a limited-slip differential.

MOSTLY TASTEFUL BODY MODS DISTINGUISH THE RS FROM LESSER FOCI. FORD DID NOT SKIMP ON THE RS'S BRAKING SYSTEM.



ESCORT RS2000

YEARS PRODUCED: 1973-1980
POWER: 110 HP

This roadgoing sister to the Escort rally cars had a 2.0-liter Pinto engine instead of the RS1600's twin-cam BDA and used a rudimentary leaf-spring rear suspension. But it quickly earned a legion of followers in Europe, especially the U.K.



ESCORT RS COSWORTH

YEARS PRODUCED: 1992-1996
POWER: 225 HP

Despite its moniker, this was an Escort in name only. The need for a compact rally car led to the Sapphire RS's four-wheel-drive powertrain, with inline turbocharged engine, being shoehorned into an Escort body shell. This RS became a favorite for European car thieves, and insurance rates eventually killed it off.



FOCUS RS (MK2)

YEARS PRODUCED: 2009-2011
POWER: 301 HP

This was the European second-gen Focus, the Mazda 3 platform buddy that wasn't sold in the U.S. Five-cylinder turbo power and front-wheel drive meant Ford needed to develop struts with a special steering knuckle to try to reduce torque steer to tolerable levels, at least until the later RS500 version arrived with 345 horses.





and offers more-linear responses than a Mitsubishi Lancer Evo or an early Subaru Impreza WRX, but there's something of the same spirit here. And that's meant as a compliment.

Adding speed also wakes up the chassis and brings the rear axle into play. At normal road pace there's no sensation of torque shuffling to the back, even in the more aggressive drive modes. But attack a corner and, at about the point you would expect to feel the front of a Focus ST shading into understeer, the rear end starts to help out, pushing the car back onto your chosen line. Johnson tells us that the RS's rear wheels are driven slightly faster than the fronts under hard cornering, creating some of the same sense of edginess you get from a powerful rear-drive car. Push beyond this and what happens next depends on which of the

THE RS HAS
PRETTY MUCH THE
SAME CROWDED,
TIGHT DRIVER'S
COMPARTMENT
AS EVERY FOCUS.
BUT JUST IN
FRONT OF THAT
IS A 350-HP
POWERHOUSE.

dynamic modes you've selected. In normal, the RS tries to stay as neutral as Belgium itself, while sport allows a hint of drift from the rear. Track permits some well-contained power oversteer.

But what if that's not enough? What if, after seeing all those viral videos, you want the full Ken Block? This brings us to the much-vaunted "drift mode," a feature that, when Ford announced it, pretty much set the internet on fire. We got to experience it on one of Lommel's vast skidpads, where, after selecting the appropriate mode, all that was necessary was to apply steering lock and throttle at the same time. There's some initial "Are-you-sure?" understeer and then, as most of the engine's output is sent to the outside-rear wheel, a sudden transition into tire-squealing, rubber-vaporizing oversteer.

It's enough to warm the heart of any would-be Hoonigan, although the resultant cloud of tire smoke is also likely to lighten his or her wallet. This is especially relevant as, at low speeds, the RS can be made to spin practically in its own length. The stability control remains active in drift mode, marshaling torque and pinging the brakes to try to keep you at a suitably heroic angle. The system only lets the back of the car slide to a point where the front wheels are aimed straight ahead, not into the sort of generously dosed opposite-lock that encourages the most purple of automotive prose. This actually makes it hard to hold a higher-speed slide for more than a couple of seconds, although we suspect that will be enough for most owners. It should certainly help with the creation of plenty of "Hey, watch this!" YouTube bloopers.

We left Belgium unable to answer the question of how the Focus will deal with the world outside Lommel's carefully honed simulation of it, but we left impressed nevertheless. The new Focus RS lacks the crude charm that earned its predecessors their European cult following, its global ambition reflected in the fact that it's a far more accomplished car. Ford has been building RS models for nearly five decades, and Americans have been lobbying for them for nearly as long. The first one to officially cross the Atlantic may be one of the best. ■



CHARIOTS C

comparo .

043



OF THE DADS

*LUXURY SUVs ARE NOW THE
PREFERRED BATTLEWAGONS OF
MONTESSORI PARKING LOTS.*

by Tony Quiroga

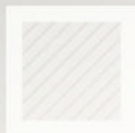
photography by JAMES LIPMAN



↑
BMW X5
xDRIVE35i
PRICE > \$68,270
POWER > 300 hp
TORQUE > 300 lb-ft
WEIGHT > 4974 lb
C/D OBSERVED MPG > 17

↙
VOLVO XC90
T6 AWD
INSCRIPTION

PRICE > \$67,055
POWER > 316 hp
TORQUE > 295 lb-ft
WEIGHT > 4706 lb
C/D OBSERVED MPG > 17



The ramifications of the crossover—or, more accurately, the unibody SUV—are still vibrating through the luxury segment. Americans just can't get enough of these pricey family haulers, and buyers are even beginning to choose them over like-sized sedans. To wit:

Audi expects the new Q7 to outsell the A6 in a year or two, and the BMW X5 already trumps the 5-series. After only nine months on the market, the redesigned Volvo XC90 is the Swedish brand's bestseller. And more Americans take home a Land Rover Range Rover Sport than Jaguar sells cars, a big factor in Jag's decision to build the forthcoming F-Pace SUV.

Practicality is a major reason these crossovers are eating away at mid-size sedan sales. So, in the interest of practicality, we decided to compare the most practical three-row versions, settling on a somewhat impractical price point of \$70,000, give or take a few grand. Entering those parameters into the C/D comparotron spit out the four SUVs here. To keep the playing field



↑
**LAND ROVER
RANGE ROVER
SPORT HSE**

PRICE > \$87,281
POWER > 340 hp
TORQUE > 332 lb-ft
WEIGHT > 5183 lb
C/D OBSERVED MPG > 15



↑
AUDI Q7 3.0T

PRICE > \$72,875
POWER > 333 hp
TORQUE > 325 lb-ft
WEIGHT > 5080 lb
C/D OBSERVED MPG > 17

reasonably level, we equipped each vehicle with a third row of course (optional on the BMW and Rover), power everything, a huge sunroof, active cruise control, blind-spot monitoring, and other safety equipment that allows these crossovers to trundle down the highway with brief moments of autonomy.

Of the four we've gathered, the BMW X5 is the undisputed sales champ. BMW averages 45,000 South Carolina-built X5 sales per year in the U.S. Present at the creation of the segment, BMW launched the X5 for 2000 and delivered the third-gen model for the 2014 model year. Add up the options and the 300-hp X5 xDrive35i that starts at a reasonable \$57,195 swells into the \$68,270 machine tested here.

Audi didn't sell an SUV until 2006, but the Q7 made up for its tardiness with a big dose of goodness. In the intervening years, updates kept the Q7 fresh and sales strong. The new Q7 is so new that it skips model-year 2016 entirely to jump right to 2017.

The Audi's price starts at \$55,750, but bringing its equipment level in line with the rest of the group means ponying up \$9500 for the Prestige trim level. With a few more options—such as the Driver Assistance package, adaptive air suspension, and Glacier White paint—the price rises to \$72,875.

The Volvo XC90 is another freshly redesigned luxury crossover. Built on a new platform, the XC90 has the only four-cylinder engine in the class—but a four that is a 316-hp 2.0-liter powerhouse with both a supercharger and a turbocharger strapped to it. It does an amazing impersonation of a larger engine, but the “small heart in a big three-row SUV” strategy reminds us of the ticker in a Great Dane. Those big dogs don't live long, and the Volvo's 2.0-liter had us wondering how durable its hardworking heart will prove to be.

The XC90 T6 AWD has a base price of \$50,795, but the Inscription trim level's LED headlights, walnut inlays, vented seats, and decadently soft leathers add \$5600. Include the safety and luxury goods that bring parity with the rest of the group and the price goes up to \$67,055, still the least expensive of the test.

On the other end of the price scale is the Land Rover Range Rover Sport HSE, a chunk of aluminum that starts at \$65,945 but runs to \$87,281 when equipped as the others. We could chip away at a few options, such as the Meridian Premium Audio system (\$1850), the towing package (\$650), black-lacquer wood (\$350), rubber mats (\$537), and wheel locks (\$134), but even without all that, the Range Rover Sport is still more than \$80,000. We considered the less dear LR4, but concluded that its body-on-frame architecture—what Land Rover calls integrated body frame—would make it an outlier in the group.

Also considered, but cut for its lack of a third row, was the Mercedes-Benz GLE (formerly the M-class). To get a third row in a Benz SUV requires the larger and more expensive GLS, or the SUV formerly known as the GL-class [see page 095]. We didn't include the GLS out of concern that its size and price were excessive for this test. This was admittedly before we found out the Range Rover Sport's as-tested price. Other three-row lux SUVs, such as the Acura MDX, Infiniti QX60, Lexus GX470, and Lincoln MKT, were all deemed too inexpensive, hence this fab four.

	2017 AUDI Q7 3.0T	BMW X5 xDRIVE35i
VEHICLE		
BASE PRICE	\$55,750	\$57,195
PRICE AS TESTED	\$72,875	\$68,270
DIMENSIONS		
LENGTH	198.9 inches	193.2 inches
WIDTH	77.5 inches	76.3 inches
HEIGHT	68.5 inches	69.4 inches
WHEELBASE	117.9 inches	115.5 inches
FRONT TRACK	66.1 inches	64.7 inches
REAR TRACK	66.6 inches	65.0 inches
INTERIOR VOLUME	F: 55 cubic feet M: 51 cubic feet R: 30 cubic feet	F: 57 cubic feet M: 48 cubic feet R: 26 cubic feet
CARGO BEHIND	F: 72 cubic feet M: 38 cubic feet R: 15 cubic feet	F: 66 cubic feet M: 23 cubic feet R: 12 cubic feet*
TOWING		
MAX	7700 pounds	6000 pounds
AS TESTED	7700 pounds	6000 pounds
POWERTRAIN		
ENGINE	supercharged DOHC 24-valve V-6 183 cu in (2995 cc)	turbocharged DOHC 24-valve inline-6 182 cu in (2979 cc)
POWER HP @ RPM	333 @ 6500	300 @ 6000
TORQUE LB-FT @ RPM	325 @ 2900	300 @ 1300
REDLINE/FUEL CUTOFF	6250/6300 rpm	7000/7000 rpm
LB PER HP	15.3	16.6
DRIVELINE		
TRANSMISSION	8-speed automatic	8-speed automatic
DRIVEN WHEELS	all	all
GEAR RATIO:1/	1 4.71/5.8/37	1 4.71/5.7/40
MPH PER 1000 RPM/	2 3.14/8.7/55	2 3.14/8.5/60
MAX MPH	3 2.11/13.0/82	3 2.11/12.6/88
	4 1.67/16.4/103	4 1.67/16.0/112
	5 1.29/21.2/128	5 1.29/20.7/128
	6 1.00/27.4/128	6 1.00/26.7/128
	7 0.84/32.6/128	7 0.84/31.8/128
	8 0.67/40.8/128	8 0.67/39.8/128
AXLE RATIO:1	3.20	3.15
CHASSIS		
SUSPENSION	F: multilink, air springs, anti-roll bar R: multilink, air springs, anti-roll bar	F: multilink, coil springs, anti-roll bar R: multilink, air springs, anti-roll bar
BRAKES	F: 14.8-inch vented disc R: 13.8-inch vented disc	F: 13.1-inch vented disc R: 12.6-inch vented disc
STABILITY CONTROL	partially and fully defeatable	partially defeatable, traction off
TIRES	Goodyear Eagle Sport All-Season Run-Flat 285/45R-20 112H	Pirelli Scorpion Verde All-Season Run-Flat 255/50R-19 107H M+S

C/D TEST RESULTS

ACCELERATION		
0-30 MPH	2.1 sec	2.1 sec
0-60 MPH	5.5 sec	5.8 sec
0-100 MPH	14.5 sec	15.7 sec
0-120 MPH	22.6 sec	25.2 sec
1/4-MILE @ MPH	14.2 sec @ 99	14.5 sec @ 96
ROLLING START, 5-60 MPH	6.4 sec	6.8 sec
TOP GEAR, 30-50 MPH	3.4 sec	3.4 sec
TOP GEAR, 50-70 MPH	4.3 sec	4.4 sec
TOP SPEED	128 mph (gov ltd)	127 mph (gov ltd)
CHASSIS		
BRAKING, 70-0 MPH	166 feet	178 feet
ROADHOLDING,		
300-FT-DIA SKIDPAD	0.85 g	0.79 g
610-FT SLALOM	36.9 mph	34.3 mph†
WEIGHT		
CURB	5080 pounds	4974 pounds
%FRONT/%REAR	55.3/44.7	47.5/52.5
FUEL		
TANK	22.5 gallons	22.5 gallons
RATING	91 octane	91 octane
EPA CITY/HWY	19/25 mpg	18/24 mpg
C/D 600-MILE TRIP	17 mpg	17 mpg
SOUND LEVEL		
IDLE	43 dBA	41 dBA
FULL THROTTLE	70 dBA	73 dBA
70-MPH CRUISE	65 dBA	64 dBA

**LAND ROVER
RANGE ROVER
SPORT HSE**

\$65,945
\$87,281

190.9 inches
78.1 inches
70.1 inches
115.1 inches
66.5 inches
66.3 inches
F: 58 cubic feet
M: 50 cubic feet
R: 20 cubic feet
F: 62 cubic feet
M: 28 cubic feet
R: 9 cubic feet

7716 pounds
7716 pounds

supercharged DOHC
24-valve V-6
183 cu in (2995 cc)

340 @ 6500
332 @ 3500
6800/6400 rpm
15.2

8-speed automatic
all
1 4.70/5.1/33
2 3.13/7.6/49
3 2.10/11.3/72
4 1.67/14.3/92
5 1.29/18.5/119
6 1.00/23.9/130
7 0.84/28.4/130
8 0.67/35.6/130
3.73

F: control arms, air
springs, anti-roll bar
R: multilink, air
springs, anti-roll bar
F: 13.8-inch vented
disc
R: 13.8-inch vented
disc
partially defeatable

Goodyear
Eagle F1 Asymmetric
AT SUV-4x4
255/55R-20 110Y

**VOLVO
XC90 T6 AWD
INSCRIPTION**

\$56,395
\$67,055

194.8 inches
79.1 inches
69.9 inches
117.5 inches
65.7 inches
65.8 inches
F: 53 cubic feet
M: 47 cubic feet
R: 31 cubic feet
F: 86 cubic feet
M: 42 cubic feet
R: 16 cubic feet

5000 pounds
5000 pounds

turbocharged and
supercharged DOHC
16-valve inline-4
120 cu in (1969 cc)

316 @ 5700
295 @ 2200
6600/6200 rpm
14.9

8-speed automatic
all
1 5.25/4.9/30
2 3.03/8.5/53
3 1.95/13.1/81
4 1.46/17.6/109
5 1.22/21.0/130
6 1.00/25.6/132
7 0.81/31.6/132
8 0.67/38.3/132
3.33

F: control arms, air
springs, anti-roll bar
R: multilink, air
springs, anti-roll bar
F: 13.6-inch vented
disc
R: 12.6-inch vented
disc
partially defeatable

Pirelli
Scorpion Verde
All-Season
275/40R-21 107V M+S

2.1 sec
5.9 sec
15.4 sec
24.3 sec
14.5 sec @ 97

6.5 sec
3.2 sec
4.4 sec
130 mph (gov ltd,
mfr's claim)

176 feet
0.78 g
36.3 mph†

5183 pounds
48.4/51.6

27.7 gallons
91 octane
17/23 mpg
15 mpg

45 dBA
79 dBA
64 dBA

2.3 sec
6.0 sec
15.5 sec
25.3 sec
14.6 sec @ 97

7.1 sec
3.4 sec
4.6 sec
132 mph (gov ltd)

167 feet
0.84 g
35.0 mph†
4706 pounds
52.3/47.7

18.8 gallons
91 octane
20/25 mpg
17 mpg

48 dBA
74 dBA
65 dBA



4. BMW X5 xDrive35i

What is the strongest-selling SUV of the bunch, the one that basically invented the segment, doing in the caboose?

After all, it has the safety and electronic features to play in this game, and its \$68,270 price undercuts all but the Volvo. Under the hood is BMW's superb turbocharged inline-six. It whirs and purrs with a nearly magical lack of vibration or harshness, delivering big, smooth power and decent fuel economy. Its zero-to-60 run is second only to the Q7's, and its 4974-pound mass is lighter than the aluminum-rich Audi and Land Rover. More upright than the Q7 and the Landie, the X5 has an expansive greenhouse and a panoramic view out.

Drive any of the other three, however, and the X5 disappoints. The light steering stiffens up in sport mode, but nothing can change the BMW's lack of steering precision. It requires more corrections on straight roads than the others need. A soft suspension soaks up bumps and the structure is unshakable, but there's a pause before the chassis takes a set. The body leans more than the other three, and the stability control steps in more than we'd like, even when the X5 claims "DSC off." The BMW posted the slowest slalom speed and

BMW X5 xDRIVE35i

- BMW still builds great engines. Lighter than the two aluminum-rich SUVs in this test.
- Dull design, dull dynamics, tight third row.
- A game changer whose game has been changed.

the second-lowest grip (0.79 g). The tires almost feel overinflated even at their recommended pressures. Features editor Jeff Sabatini lamented the X5's lack of BMWness. "Kind of shocked how little it feels like a BMW. It's missing that planted and in-control driving quality that made BMW famous," he wrote. The rest of us agreed, which is why the X5 places last in the fun-to-drive category.

New for 2014, the X5 suffers from premature aging. Inside, the dour black interior is uninspired, dull, and dated. This looks like a \$50,000 SUV, not one pushing \$70,000. Displays in the gauge cluster, head-up unit, and center screen lack the clarity and sophistication of the ones in the Volvo and Audi. The LED lighting in the doors and instrument panel appears to be an afterthought. BMW's analog gauges, though, are a welcome bit of timeless style.

Back-seat riders get big windows and good legroom. The way-back cushion is low, forcing knees up into chests, and headroom there is severely lacking and the worst of the group. This row should only be used for short distances. Presumably to assuage the suffering of third-row contortionists, BMW gives them their own climate vents.

No one praised the X5's exterior styling. Road-test editor Mike Sutton was the kindest when he called it "forgettable." The available \$4450 M Sport package greatly improves the curb appeal, but when it costs that much to make a nearly \$70,000 SUV look good, that's a problem.

BMW might have invented this segment, but it has since been reinvented by someone else.

↓ Somehow, the BMW was the worst-handling SUV in this test. Its tight third row and paucity of features didn't help, either.





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¹Pre-production model shown; see actual production vehicle for final details on features before purchase. ²Limited availability. ³Available feature. See Nissan Towing Guide and Owner's Manual for proper use. Always wear your seat belt, and please don't drink and drive. ©2016 Nissan North America, Inc.

3. Land Rover Range Rover Sport HSE

There was a moment of disbelief when we discovered that the Range Rover Sport can be ordered with a third row. Next we expect to learn that the Morgan 3 Wheeler offers a tow package. How could this Land Rover possibly slip a third row under that sloping roofline?

Well, it did, but just barely. Those two little seats are usable in a pinch, but even kids won't want to ride there for long. The only concessions to comfort are two head-shaped cutouts in the headliner that provide a little extra noggin space. So Land Rover checks the third-row box, but only by using copious quantities of design Vaseline.

A more pleasant surprise from Land Rover is that the RR Sport is more fun and agile than the BMW. The steering is accurate, body motions are kept in check, and the supercharged V-6 pulls ferociously if a bit coarsely. Two counter-rotating balance weights diminish the shakes of this 90-degree V-6, converted from a V-8, but the engine's grittiness results in the most noise at full whack. It's the thirstiest at 15 mpg, and it's the heaviest of the group at 5183 pounds despite its aluminum structure. But it's also incredibly solid and sub-

stantial and feels grandiose as it presses the road into submission. It delivers a sense of Arthurian invincibility as you peer over the square-jawed front end. Nothing can stop you, except for maybe the odd British relay going kablooeey. If only Rover could make the interior trim as solid as the platform. We didn't hear rattles, but the passenger's-side vent trim pulled off in someone's idle hands.

Land Rover saves its best interior stuff for the top-of-the-line Range Rover, base price of \$85,945. In black, the lesser Sport's interior looks plain, the design appearing to be five years old. Or maybe that's just an uncharitable way of saying it's classic. In any case, a contrasting leather color would brighten up the space.

The jeweled gauge faces are a tacky reminder that you didn't spend for the optional TFT digital display, included in a \$10,045 HST Limited Edition package. Both the Volvo and the Audi have interiors to rival the "real" Range Rover. The old touch screen works well, even if the display graphics are more BlackBerry than iPhone. And it's a reach to get to some of the functions on the far side of the

screen's bezel. Help is on the way, though: The 2016 has a new infotainment system. (Land Rover supplied a 2015 model, basically the same as the 2016, for this test.)

To move up in the three-row luxury-SUV ranking, the Range Rover Sport needs a big price cut, a richer-looking interior, and a real third row. While the top two finishers might not be as lordly as they roll through traffic, they're both more modern, efficient, and entertaining to drive. Plus, they're considerably less expensive.

LAND ROVER RANGE ROVER SPORT HSE

- A solid hunk of SUV, outhandles the BMW.
- Behind the times inside. If the price doesn't make your monacle fall out, the third row will.
- Too much money, not enough practicality.

↓ The V-6 that powers this Range Rover Sport is literally a V-8 with two of its cylinders left empty. It makes good power, but it's noisy.





2. Volvo XC90 T6 AWD Inscription

Three years ago, Volvo hired Robin Page, Bentley's interior design chief. Smart move. Judging from the XC90's interior, the man deserves a raise.

Forget the other SUVs in this test; this interior is suitable for a vehicle costing twice as much as the XC90. Delicate, impossibly soft leather covers the seats, doors, and instrument panel. Even the key is covered in the stuff. Volvo calls the color Amber, and it's reminiscent of a honey-hued Ferrari interior.

But the Volvo is more than just hides. Every button, bob, and stitch looks chosen for its quality and appearance, not its price. Nickel-plated bezels frame piano-black switchgear, and the sliding cup-holder cover is a flawless and intricate piece of woodwork. It all blends together harmoniously and the fits are precise and beautiful, like a Bentley designed by Italians and assembled by Germans.

Volvo makes great seats, and these heated and cooled front thrones are no exception. Soft, supportive, and graced with adjustable thigh support, the view from these chairs is commanding. A large, iPad-like touch screen in the middle of the dashboard buries its menus, but finding what you need does get easier with some practice. Still, it usually takes two inputs to accomplish a task as simple as disabling the automatic stop-start system.

In the middle row, the occupants sit perched above the first, as in a theater, and the high roof gives the impression of spa-

VOLVO XC90 T6 AWD INSCRIPTION

- ✚ Interior mastery, steering you can feel, three rows of comfort.
- ✚ A stressed four tries its little heart out in a six-cylinder segment.
- ✚ Submit to the seduction of a beautiful Swede.

↑ The XC90 is such a pleasant and practical vehicle that it would easily have won this comparison test were it not for that pesky Audi.

ciousness. Even the third row is comfortable. The two seats sit well off the floor, and the space is suitable for adults. Volvo earns straight As for the passenger-hauling part of this test.

Fitted with the optional air suspension, the XC90 soaks up the worst roads and will charge down the best ones. Zero-effort steering becomes heavier and more tactile in dynamic mode. The XC90 suppresses body roll, and there's a nimbleness here missing from the others, even if that doesn't

show up in the slalom results (blame stability-control intervention). The Volvo is 268 pounds lighter than the X5 and nearly 400 pounds lighter than the Q7, though a few drivers did complain about creaks





coming through the structure on rough pavement and steep driveways.

Volvo's supercharged and turbo-charged mighty mite has excellent throttle response in dynamic mode, but that doesn't change the fact that the XC90's 6.0-second zero-to-60 sprint is the slowest in the test. We'd be more forgiving if the engine made interesting noises, but Volvo appears to want to hide the fact that this crossover even has an engine. A thick foam-and-plastic cover sits on top of the four to silence it, but at higher revs an anguished groan penetrates the sound deadening. The Audi and the BMW sixes sound much better. Volvo's four pays no fuel-economy dividend, either. Its as-tested 17 mpg is identical to the BMW and Audi sixes.

Elegant from headlight to taillight, the Volvo is a piece of art that is perhaps not the ideal place for a four-cylinder engine.

1. 2017 Audi Q7 3.0T

Every driver who stepped out of the Volvo was ready to declare it the winner. And then they stepped into the Audi. The Q7 is a 5080-pound sanctuary of aluminum and steel. Within a mile, you'll forget the beautiful Swede you left behind.

The Audi combines the structural goodness and solidity of the Land Rover with the deftness of the Volvo. Actually, the Q7 is even more carlike than the XC90. In its sportiest mode, the optional air suspension lowers the ride height, and the Q7 does a passable imitation of an Audi sedan. The optional four-wheel-steering system (part of the \$4000 air-suspension package) provides an eerie stability at speed and surprising nimbleness in town. Wide tires, size

2017 AUDI Q7 3.0T

- ✚ Blends practicality, technology, refinement, and driving dynamics in a way that eludes the others.
- ✚ Audi loses the design competition to Volvo.
- ✚ Perhaps not the most emotional choice, but definitely the best choice.

↑ The Q7 is the quickest and most fun-to-drive rig in this test. That it makes no sacrifice in utility for its performance means it's the winner.

285/45R-20, offer 0.85 g of stick, and while the steering lacks the clear voice of the Volvo's, we can't fault its precision. The Q7 quickly emerged as the most fun to drive.

Some of the joy comes from the 333-hp supercharged V-6. Despite the second-highest curb weight, the blown Audi posted a best-in-test 5.5-second run to 60. Audi's V-6 snarls a pleasing tune, and only the straight-six in the BMW sounds better.

Volvo's design team may have trumped Audi's interior designers, but the Audi's cabin is still a class above the Land Rover's and the BMW's. There is artistry in the way the leather and wood seamlessly butt up against modern tech like the large MMI touchpad.

From the driver's seat, a head-up display and two big TFT screens vie for your attention. A display that can be configured to show trip information, engine-related dials, or a detailed map replaces traditional gauges. At night, on a fogged-in mountain stretch of California state route 58, the map right in front of the driver showed the way around the next corner. None of the other SUVs' maps could provide that level of detail.

The Audi can't quite match the Volvo's passenger-hauling capability, but it comes close. There's no theatre-style seating in the second row, as in the Volvo, but head-, leg-, and shoulder room are plentiful. Third-row riders will find more space and comfort in the Audi than in the BMW or the Land Rover, but the Volvo is still champ.

Although the Volvo tugged at our emotions with its design, Audi earns the win with execution, packaging, and driving pleasure. ■



★ FINAL RESULTS

RANK **1** **2** **3** **4** **053**

Maximum points available
2017 Audi Q7 3.0T
Range Rover Sport HSE
Volvo XC90 T6 AWD
BMW X5 xDrive35i

VEHICLE		10	10	9	8	7
DRIVER COMFORT	10	10	9	8	8	7
ERGONOMICS	10	9	8	8	3	4
SECOND-ROW COMFORT	5	4	5	4	5	4
SECOND-ROW SPACE*	5	5	4	5	1	3
THIRD-ROW COMFORT	5	4	5	5	3	3
THIRD-ROW SPACE*	5	5	5	1	3	3
CARGO SPACE*	5	4	5	5	3	3
TOWING CAPACITY*	5	5	2	5	3	3
FEATURES/AMENITIES*	10	10	7	8	5	5
FIT AND FINISH	10	10	10	7	8	6
INTERIOR STYLING	10	9	10	7	6	7
EXTERIOR STYLING	10	7	10	10	0	1
REBATES/EXTRAS*	5	0	2	0	1	1
AS-TESTED PRICE*	20	19	20	14	20	20
SUBTOTAL	115	101	102	80	80	80

POWERTRAIN

1/4-MILE ACCELERATION*	20	20	18	19	19
FLEXIBILITY*	5	3	2	4	3
FUEL ECONOMY*	10	10	10	8	10
ENGINE NVH	10	9	7	6	9
TRANSMISSION	10	10	8	8	8
SUBTOTAL	55	52	45	45	49

CHASSIS

PERFORMANCE*	20	20	19	17	17
STEERING FEEL	10	9	10	9	6
BRAKE FEEL	10	9	8	8	8
HANDLING	10	10	9	8	7
RIDE	10	9	10	8	8
SUBTOTAL	60	57	56	50	46

EXPERIENCE

FUN TO DRIVE	25	21	19	18	15
GRAND TOTAL	255	231	222	193	190

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CAR AND DRIVER

*These objective scores are calculated from the vehicle's dimensions, capacities, rebates and extras, and/or test results.



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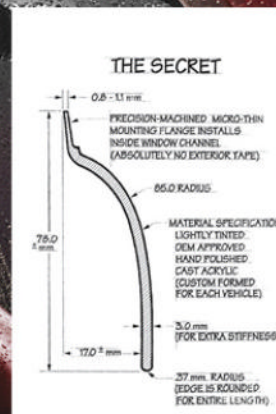
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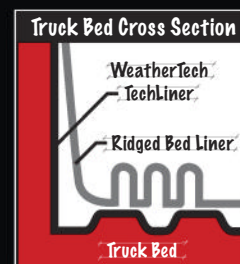
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063

TOYOTA PRIUS TWO ECO



Okay, so we didn't quite wring 56 mpg from the new Prius. We only managed 47 mpg over our 1009 lead-footed miles behind the wheel; well over half of those miles were on the highway, where the Prius' rated fuel economy is 5 mpg lower than it is in the city. But we're confident that any semi-normal driver will see mileage figures in the 50s.

That is remarkable efficiency for a car with enough space to lug four adults and nearly twice the luggage that can fit into a Camry. It's also amazing that, as the Prius enters its 20th year of production, Toyota manages to keep extracting better mileage from its signature hybrid.

The family now includes six trims: Prius Two, Prius Two Eco, Prius Three, Prius Three Touring, Prius Four, and Prius Four Touring (the previous c and d Prius models live on for 2016). Versus the outgoing gen-three Prius's 51 mpg city and 48 highway, the fourth-generation 2016 model posts EPA figures of 54 city, 50 highway. Moreover, the extra-virtuous Prius Two Eco model is rated 58 city, 53 highway.

BY CSABA CSERE
PHOTOGRAPHY BY ROY RITCHIE

It's interesting to compare those figures with the original Japanese-market model, which we'll call "Generation Zero." By today's EPA standards, its fuel-economy ratings would have been 35 mpg city/37 highway. When we tested that car in '99, we measured 35 mpg, a far cry from the 47 we saw in the new Eco, especially when the gen-four model is so much faster and roomier. Squeezing efficiency gains of this magnitude from a complex hybrid powertrain is an exercise in continuous detail development.

For example, the new Prius has a revised version of Toyota's 1.8-liter 2ZR-FXE Atkinson-cycle engine used by previous hybrids. Redesigned intake ports promote faster combustion. More exhaust-gas recirculation, cooled by a dedicated heat exchanger, allows the engine to run at larger throttle openings for reduced pumping losses. Then there are some reduced-friction components, tighter control of coolant temperature through active grille shutters, and an

improved exhaust-heat recirculation system. The result is a peak thermal efficiency reaching a diesel-like 40 percent.

The traditional Toyota hybrid CVT transaxle also got a rework. The electric propulsion motor, called MG2, is smaller and lighter than before. To trim friction, the planetary gearset between MG2 and the final drive has been replaced by helical gears. A second electric motor/generator, called MG1, still starts the engine, controls the drive ratio, and generates electricity to recharge the battery and to power MG2. Overall, the new lighter and more compact Prius powertrain is more like the Ford hybrid transaxle arrangement, which is based on Toyota patents.

Toyota's hybrid mavens also massaged the power-control electronics to cut their energy losses by about 20 percent. This circuitry is now sending power back and forth to a new lithium-ion (Li-ion) battery that replaces the nickel metal-hydride (Ni-MH)

unit on all Prius models except for the base Prius Two. This battery is smaller and lighter than the Ni-MH one, though even the latter has been compacted so that both batteries now fit under the back seat.

The Prius Two Eco achieves exemplary mileage thanks to a number of measures. Its Li-ion battery and a tire-inflator kit rather than a spare shave 65 pounds versus the Prius Two. That's enough to drop it one 125-pound weight class on the EPA fuel-economy tests. It also gets special Dunlop Enasave 01 A/S low-rolling-resistance tires, inflated to slightly higher pressures, and a solar-reflecting windshield to reduce the air conditioner's workload.

This efficient technology is wrapped in the latest incarnation of the Prius wedge that made its debut with the 2004 gen-two model. The shape gets more stylized with each generation, and the 2016 has more bumps, grooves, and illumination than ever. In keeping with typical American-market



TOYOTA PRIUS

- Plenty of room for people and stuff, comfortable ride, great mileage.
- Low performance, lots of highway road noise, no driving precision.
- A practical transportation device wearing a well-earned cloak of environmental virtue.

upgrade traditions, it's also longer by 2.3 inches, lower by 0.6 inch, and wider by 0.6 inch. The claimed drag coefficient drops from 0.25 to 0.24.

Though this Prius is built on Toyota's new TNGA platform, its wheelbase is still 106.3 inches, a dimension seen on the 2004 model. But it uses more high-strength steel than the 2015 Prius (up from 3 to 19 percent); is assembled with more adhesives plus something called laser screw welding; and has several reinforcements in the cowl area. Toyota claims 60-percent greater torsional rigidity than the old model. There's



↑ Top: No matter what we tried, this joystick provided no joy. Above right: Toyota is sticking with the center-mounted gauges so current Prius owners will know where to look for information.



also more sound insulation and a floor silencer pad constructed without seams to more effectively curb road noise.

One other new platform feature is a control-arm rear suspension, replacing the previous trailing twist axle. Toyota touts this as making the Prius more “fun to drive,” though that’s like saying *Finnegans Wake* is more fun with pictures. But the new model is indeed more dynamically capable than the last one.

When you turn the steering wheel there is quick response. Cornering grip is up from 0.81 to 0.84 g. Still, no one will confuse the

Prius with a VW GTI. The electrically assisted steering is improved but remains narcoleptic on-center, with a sticky feel as you turn into a corner. When you release the wheel after negotiating a gentle bend on the interstate, the Prius just keeps turning until you manually center the steering.

The powertrain is no more enthusiastic, though it does have slightly peppier acceleration. Zero to 60 mph drops from 10.0 seconds to 9.4, despite the nominal overall system power dropping from 134 to 121 horsepower, mostly due to a new rating system. But the CVT’s general decoupling

of the engine rpm from the actual road speed defuses any excitement this modest acceleration might generate.

Even the cruise control reinforces this lazy impression, as it never exceeds your set speed and often runs a mph or two below it. This car is going to save fuel whether you like it or not.

The Prius rides softly over big bumps, but the free-rolling 15-inch tires feel almost as flinty as the low-profile 20-inchers on a Porsche 911. Despite the upgraded sound insulation, the rubber produces nearly as much road noise as the 911, too, particularly

on concrete pavement. Apparently, noise is the byproduct of highly specialized tires, whether they're optimized for maximum grip or minimal rolling resistance.

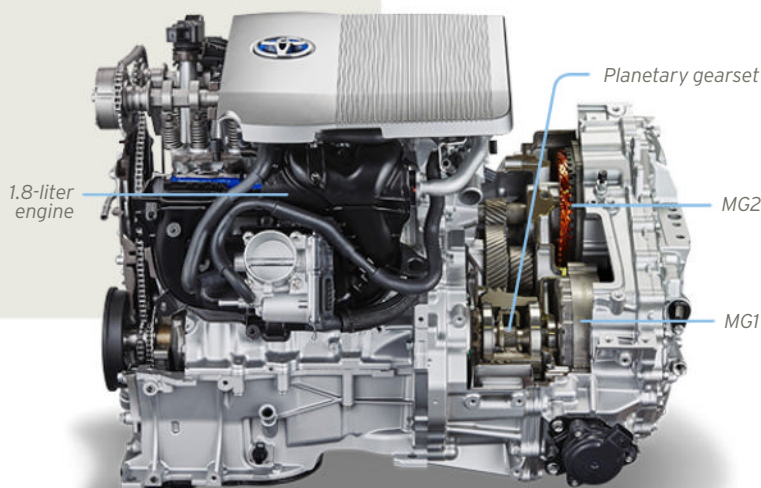
The brakes stop the car in a reasonable 175 feet—the shortest ever for a Prius. But the pedal feel remains confused by the necessary blending of the hydraulic and regenerative brake systems.

Despite Toyota's attempts to inject some sporting verve into the Prius, that's never been what the car is about. Instead, it's a perfectly practical transportation device that happens to get superb mileage.

The latest version retains the excellent interior package that will comfortably accommodate four six-footers. There's decent legroom in the rear compartment, a comfortably high seating position, space for feet under the front seats, and sufficient headroom, even with the tapering roof.

Luggage space has reached an all-time Prius high—now 25 cubic feet, up from 22—thanks to the relocation of the battery to beneath the rear seat. And in the Eco and

↓ In previous generations, the electric motor/generator that drives the wheels, MG2, was located in line with the engine crankshaft and the other electric machine. For the fourth Prius, MG2 sits on a parallel shaft to reduce parasitic losses. The less powerful motor/generator, MG1, starts the engine, controls the engine's load and rpm (effectively the transmission ratio), and supplies the larger motor with electricity; it does not provide torque. The inverter (not pictured) now sits directly on top of the hybrid drive unit, eliminating the thick, heavy cables that carried high-voltage electricity.



a couple of other models without a spare tire, it increases another two cubic feet as the trunk floor drops about three inches.

The driving position is excellent. There's a tilting-and-telescoping steering column and great headroom beneath the bubble-top roof. In traditional Prius fashion, the instrument cluster is centered on the dash, just below the base of the windshield.

This dash is a highly stylized piece with multiple layers and colors. The main panel has a hard black top, which flows into the doors, and a beige lower section, which

TOYOTA PRIUS TWO ECO

▼ SPECIFICATIONS

PRICE
AS TESTED \$25,930
BASE \$25,535

VEHICLE TYPE: front-engine, front-wheel-drive, 5-passenger, 4-door hatchback
OPTIONS: Blizzard Pearl Paint, \$395
STANDARD: power windows and locks; remote locking; cruise control; tilting-and-telescoping steering wheel
AUDIO SYSTEM: CD player; minijack, USB, and Bluetooth-audio inputs; 6 speakers

ENGINE
 Atkinson-cycle inline-4, aluminum block and head
BORE X STROKE ... 3.17 x 3.48 in, 80.5 x 88.3 mm
DISPLACEMENT 110 cu in, 1798 cc
COMPRESSION RATIO 13.0:1
FUEL DELIVERY SYSTEM port injection
VALVE GEAR: double overhead cams, 4 valves per cylinder, hydraulic lash compensation, variable intake-valve timing
POWER 95 hp @ 5200 rpm
TORQUE 105 lb-ft @ 3600 rpm

MOTOR/GENERATOR
 Synchronous permanent-magnet AC
POWER 71 hp
TORQUE 120 lb-ft
COMBINED SYSTEM POWER 121 hp

BATTERY PACK
 lithium-ion, air-cooled
CELL COUNT/CONSTRUCTION 56/prismatic
CAPACITY 0.8 kWh
MANUFACTURER ... Primearth EV Energy Company

DRIVETRAIN
TRANSMISSION continuously variable automatic
FINAL-DRIVE RATIO 2.83:1

CHASSIS
 unit construction
BODY MATERIAL: steel and aluminum stampings

STEERING
 rack-and-pinion with variable electric power assist
RATIO 13.4:1
URNS LOCK-TO-LOCK 2.9
TURNING CIRCLE CURB-TO-CURB 33.5 ft

SUSPENSION
F: ind, strut located by a control arm, coil springs, anti-roll bar
R: ind, 1 trailing arm and 3 lateral links per side, coil springs, anti-roll bar

THE FORWARD MARCH OF PRIUS

Since the Prius's introduction in 1997, Toyota has produced six versions of the hybrid, each progressively—and somewhat astoundingly—more efficient than its predecessor. Whether you gauge the progress by EPA label numbers (estimated for the 1997 model) or the C/D-observed fuel economy, the mileage improvements range from 34 percent to 66 percent.

LABEL MPG	1997	2001	2004	2010	2016	2016 Eco	OVERALL GAIN
CITY	35	42	48	51	54	58	66%
HIGHWAY	37	41	45	48	50	53	43%
COMBINED	36	41	46	50	52	56	56%
C/D OBSERVED	35	35	42	42	—	47	34%

EXTERIOR DIMENSIONS

WHEELBASE 106.3 in
LENGTH 178.7 in
WIDTH 69.3 in
HEIGHT 58.1 in
FRONT TRACK 60.2 in
REAR TRACK 60.6 in
GROUND CLEARANCE 5.1 in

INTERIOR DIMENSIONS

SAE VOLUME **F:** 54 cu ft **R:** 38 cu ft
TRUNK 27 cu ft

BRAKES

F: 10.0 x 1.0-in vented disc
R: 10.2 x 0.4-in disc
STABILITY CONTROL partially defeatable, traction off

WHEELS AND TIRES

WHEEL SIZE/CONSTRUCTION 6.5 x 15 in/
 cast aluminum
TIRES Dunlop Enasave 01 A/S
 P195/65R-15 89S M+S



↑ Above: Ample driving and consumption data should satisfy all but the most ardent hypermilers. Above right: Wow! Just, wow!

feels only slightly squishy. Then there's a winged piano-black layer that houses the central console and spreads nearly to each front door. The shifter is anchored in a glossy-white panel beneath this console. There's perhaps one too many contrasting colors in this panoply.

Though the Prius Two Eco we tested is one of the lower line models, it comes with

some nice standard features, such as automatic climate control, a keyless entry system, and a sound system operated by a 6.1-inch touch screen that responds quickly and is easy to navigate.

Despite the high level of road noise, the Bluetooth connection is clear and we received no complaints from our interlocutors. As you'd expect, the trip computer is elaborate and appropriate for a car that brings out the latent hypermiler in its drivers. However, there's no rear wiper for the

nearly horizontal backlight, and it could use one; chalk that up to the need for unimpeded airflow in this area of the body.

With a base price of \$25,535, the Two Eco costs \$500 more than the base Two. That's a modest increment for the country's highest-mpg car without a plug. As to the Prius in general, you pay about as much as you would for a Camry with similar carrying capacity, the latter exchanging efficiency for refinement. For Prius drivers, that's one trade they're unwilling to make. ■

CAR AND DRIVER TEST RESULTS

ACCELERATION

ZERO TO	SECONDS
30 MPH	3.2
40 MPH	4.9
50 MPH	6.9
60 MPH	9.4
70 MPH	12.5
80 MPH	16.5
90 MPH	21.4
100 MPH	28.0
110 MPH	39.9
ROLLING START, 5-60 MPH	9.6
TOP GEAR, 30-50 MPH	4.7
TOP GEAR, 50-70 MPH	6.3
1/4-MILE	17.2 sec @ 81 mph
TOP SPEED (DRAG LTD)	115 mph

■ **TEST NOTES:** Applying brake torque forces the gas engine to start before the car begins moving. From the driver's seat, you can feel the power taper off as you accelerate past 50 mph.

HANDLING

ROADHOLDING, 300-FT-DIA SKIDPAD	0.84 g
UNDERSTEER	MODERATE

■ **TEST NOTES:** The Prius's stability-control system is always lurking in the background, even when you think you've disabled it. That said, an even hand and a steady right foot as you corner at the limit keep the nannies from interfering.

BRAKING, 70-TO-ZERO MPH

FIRST STOP	180 ft
SHORTEST STOP	175 ft
LONGEST STOP	185 ft
FADE RATING	NONE

■ **TEST NOTES:** The low-grip tires mean panic stops are noisy, both due to the protesting rubber and a very active anti-lock brake system. The shortest stopping distance—175 feet—came in the fourth and sixth stops, which explains why we're reporting no fade.

WEIGHT

CURB	3033 lb
PER HORSEPOWER	25.1 lb
DISTRIBUTION	F: 61.2% R: 38.8%
CENTER-OF-GRAVITY HEIGHT	21.5 in
TOWING CAPACITY	0 lb

FUEL

CAPACITY	11.3 gal
OCTANE	87 (recommended)
EPA CITY/HWY	58/53 mpg (mfr's est)
C/D OBSERVED	47 mpg

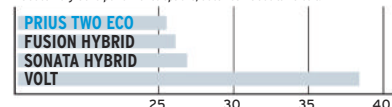
INTERIOR SOUND LEVEL

IDLE	26 dBA
FULL THROTTLE	71 dBA
70-MPH CRUISING	66 dBA

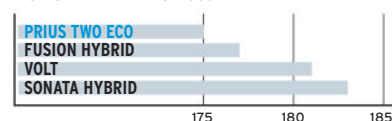
COMPETITORS

CHEVROLET VOLT (1.5-L I-4 + AC MOTOR, 149 HP, CVT)
 FORD FUSION HYBRID (2.0-L I-4 + AC MOTOR, 188 HP, CVT)
 HYUNDAI SONATA HYBRID (2.0-L I-4 + AC MOTOR, 193 HP, 6-SP AUTO)
 TOYOTA PRIUS TWO ECO (1.8-L I-4 + AC MOTOR, 121 HP, CVT)

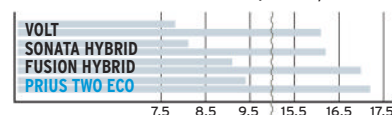
CURRENT BASE PRICE dollars x 1000
Includes freight and performance options; does not include tax credit.



70-0 BRAKING feet

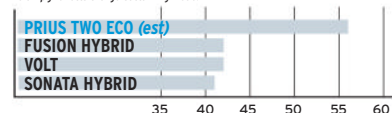


ACCELERATION 0-60 & 1/4-mile, seconds



FUEL ECONOMY EPA combined, mpg

Volt mpg reflects charge-sustaining mode.



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POCKETS EMPTY, ARMED WITH ONLY OUR WITS, WE ROAD-TRIP ACROSS THE SOUTH IN A ROLLS-ROYCE WRAITH. by Neal Pollack

Someone has stolen all our stuff. And we have no money, no credit cards, no driver's licenses, and no other form of identification on us.

Absolutely nothing.

At least, that's what we were going to tell people, hopefully within sight of the lavish, \$390,000 powder-blue Rolls-Royce Wraith we'd be driving from Houston to Atlanta. Using the Wraith as collateral for

food, gas, and a hotel room in New Orleans, we'd operate under the possibly disastrous assumption that everyone would be so blinded by the Wraith's opulence that they wouldn't ask too many questions. Could a magnificent car work as barter, an alternative form of currency, a kind of automotive Bitcoin? How far, we wondered, could two guys get with a retractable Spirit of Ecstasy and a whole lot of BS?

The Wraith has a hood as long and broad as the Mississippi Delta, underneath which lies a V-12 engine rated at 624 horsepower. It cruises at legal speeds so lazily that the "power reserve" gauge, which tells you how much oomph the engine has left in it, lolls just a tick or two below 100 percent. But we had little interest in the Wraith's power and speed; burning fuel more rapidly would only bring us to our moment of panhandling

feature . 069



photography by Michael Simari



↑ We probably could have gotten more free stuff if we were driving the cop car. Probably less if we were riding the bus.

truth that much sooner. So, departing Houston, we set the adaptive cruise control and floated down I-10 like lords of the swamp, trying not to think about the ways this could all go wrong.

In the passenger's seat, shoes off, I buried my feet in the lamb's-wool carpet and sighed with pleasure. Scheduling problems had led me to take a last-minute Greyhound to Houston for our departure, and everything about that leg of the trip was as you might imagine it. Plus, it rained.

Outside the station we had been accosted by our first fan. "Is that a Ray-Ray?" the man shouted. "I read everything about this car. Because Rick Ross has one."

And in one of those moments of serendipity, my co-pilot, features editor Jeff Sabatini, had Rick Ross at the ready on his iPhone. Before the traffic light had turned, Sabatini was blasting "Hood Billionaire" through the open window. Our new friend gave us a thumbs up.

The car's signature Starlight Headliner, 1340 fiber-optic lamps woven into the ceiling, gives off a dim glow, a private sky enjoyed only by the extremely privileged. And also me. I reached up to touch a light, making sure that it was real and leaving a little greasy smudge on the ceiling.

From the highway, just outside Beaumont, Texas, we spotted a Starbucks and decided the time was ripe for our first con. We pulled up to the gaze of the drive-through camera.

"Can I help you?" said a woman's voice over the speaker.

Sabatini began the patter that would come to sound familiar over the next two days.

"Hi," he said. "We want to order a couple of coffees, but we kind of got a little

bit of a problem here because we had our stuff stolen earlier today. And I'm wondering if it would be possible if I could pay you guys, if I could write you an IOU and we could send you the money. I know that sounds ridiculous, but maybe you could put the coffees on an account or something."

"Let me go ask my manager real quick," the voice said.

Fewer than 20 seconds passed before we heard, "How can I help you?"

We looked at each other in disbelief. *It was working.* We placed our drink order, a pair of socioeconomically appropriate soy lattes. Then the voice asked us if we wanted anything else. So we ordered some sandwiches. When we got to the drive-up window, they served us the drinks but the manager had nixed the free food, for which the cashier apologized profusely. "I hope your day gets better," she said.

"It already has," I replied.

We parked in front of a T-Mobile store to enjoy our complimentary beverages. A young woman came running out, her face as bright with enthusiasm as her pink shirt.

"What's up?" I asked, confidently.

"I was just noticing the Rolls," she said.

"You want to sit in it?"

"For reals?"

"Sure."

She quickly settled into the plushness.

"That's a nice Rick Ross carpet," she said.

"It is," I said.

Back on the road two hours later, we began to feel the effects of the Starbucks manager's decision to truncate our order. We were just outside Lafayette, Louisiana, the beating heart of Cajun foodie paradise, when hunger struck. After a little Yelping, we zeroed in on our target: the Blue Dog Café, an eatery decorated with the eponymous art of the legendary George Rodrigue. It offered midday happy-hour appetizers and soups, and we were determined to use the Wraith to score our food for free.

We parked in clear view of the host's stand. It was raining, giving us an opportunity to use the Wraith's built-in umbrellas, which pop out of each of the doorjams below the A-pillars.

We entered the restaurant and were greeted by a young guy who worked there. He might have been an assistant manager, but he was the only one in the joint other than the bartender. We would not have

much of an audience for our performance.

"Nice Bentley," he said.

"It's a Rolls, actually."

"Even better!" he said. "What do you need?"

"We got our stuff stolen," I began. "We're trying to get to Atlanta. Anyway, we saw this place written up on a New Orleans food blog, and we really want to eat. But, like I said, we don't have any money."

The guy paused and gave us a confused look. "Let me get the manager."

A couple of minutes later, Danielle Aguillard appeared. She seemed as busy as she did skeptical.

"We were really hoping to eat a little lunch," Sabatini said. "We can pay you as soon as we get to Atlanta."

"I'm gonna need some kind of ID," she said, to which Sabatini mumbled something about a business card in the glove box and stepped out to the car.

"I know it's weird to come in here with our Rolls-Royce umbrellas and ask for lunch," I said, almost giving away the game. Aguillard laughed nervously.

Sabatini returned with a business card, wrote his cell number on the back, and that was it. We were seated and told to order whatever we wanted. So we drank down a couple of pints while we waited for delicious bowls of gumbo, heaped with shrimp and crab and sausage. Soon enough the bowls were licked clean. And with our beggars' banquet complete, we left.

Now this is probably where you start wondering just how much stuff we intended to scam in the interest of this story. And truthfully, this is about when we started to wonder the same thing. Could we parlay the Roller into a spa day? Shoeshines and haircuts? A shopping spree at the outlet mall? The grift was intoxicating, but the prospect of pressing our luck to its furthest conclusion came with no shortage of guilt. We actually did have money and credit cards on us, and a Hearst expense account to boot. So we went back inside, asked for Aguillard again, and then we gave up the ruse.

"We just wanted to see how far we could get in a Rolls," I said.

To which she replied: "I would have fed you regardless. Nobody deserves to be hungry."

That sentiment, delivered in the midst of holiday decorations, was as humbling as it was Capra-esque. So was the way people swarmed the car whenever we stopped, asking us questions and shaking our hands, taking phone videos of the Wraith as if it were some sort of sacred relic. We were

↓ Below: Pricey coffeelike drinks procured while in a pricey carlike status symbol. Both were free to us. Bottom: Freeloaders in pink shirts eating gumbo. Center: The Wraith saw to it that we at least didn't have to borrow anyone's umbrella. Bottom right: Working our own voodoo economics in New Orleans.





never treated like ruling-class jerks. It was more like: "Congratulations, man. You made it." If we'd been driving this thing through Scottsdale or Vegas or Beverly Hills, places where Rolls-Royces get treated like set dressing, it might not have been the same. On our route, however, this car represented the ultimate escape pod.

When we stopped the next day for gas in Prichard, Alabama, needing one last dose to get us to Atlanta, Mario Gibson, a 21-year-old tire tech, came bursting out of the Love's truck stop. He told us about Memphis rapper Young Dolph, who recently got busted smoking weed in a black Wraith without legal tags. "You know how rappers do," he said.

So we laid our tale of invented woe on Gibson and asked him for \$20 for gas. He shook his head in apology, and after a moment of calculation told us that he could really only afford \$10. And we'd have to let him take a few snapshots. After he swiped his debit card and we pumped the gas, I drove him around the parking lot because he really appreciated the ride in the Wraith.

"Y'all got to have guns in this thing," he said.

"I'm scared of guns," I said, honestly.

"I'm scared of guns, too," he said, "and people will be really scared of you if you have guns in this Rolls."

We confessed the truth of our misdirection to Gibson, that we weren't really robbed, and offered him a \$20 bill because he'd been so generous. He told us: "I said to the cashier, 'Those dudes got a Rolls-Royce but they ain't got five dollars? That is some bullshit.' But I gave you the money 'cause I got a good heart."

Procuring all the free coffee and soup and a few gallons of gas were mere preludes to what we considered the main event of our journey: cadging a hotel room in New Orleans. We drifted into the Big Easy high on our day's successes, Sabatini muttering something about "Reaganing" and insisting that we aim for the highest of highs and check into the Ritz-Carlton.

We left the car with the valet and walked inside—only to immediately encounter security guys on high alert, talking into headsets. We learned that only blocks away, on Canal Street, police had cordoned off a

murder scene. Not a great time for pranks.

"Let's get the hell out of here," Sabatini said.

Back in the Wraith, we called an audible when we spotted the Roosevelt, a Waldorf Astoria hotel. It seemed like the kind of place a Rolls-Royce owner would stay, so we pulled over and headed in, our credit cards and IDs stowed in the glove box. The Wraith parked in front must serve as proof enough. Our word was our bond and our car was our word.

The hotel was decked out in white Christmas lights, an art-deco fantasy of a rich person's holiday. We approached the front desk.

"We got robbed," I said, quite convincingly, given all the police activity. "All our stuff is gone. All our IDs. But you can see that we have a Rolls-Royce parked out front. We can pay you as soon as we get new credit cards in Atlanta."

The clerk summoned the manager, who thought about this for a second.

"Well," she said. "We could hold the car as collateral."

"Score!" I thought. "We're going to stay at the Waldorf Astoria."

"If you had a card on file," she added.

Defeated, we retreated to the car, which seemed to be shrinking as the prospect of spending the night within it increased. When the low-fuel warning chimed, the discussion turned to whether we ought to head back in and use Sabatini's Hilton frequent-customer status to try and break the manager. But that's cheating. New Orleans has a thousand hotels. One of them must be willing to let us stay for nothing just because we're driving a nice car. One without bedbugs or an hourly meter, I hoped.

And then we spotted it. The place had Corinthian columns and a brightly lit entry flanked by fake ivy and weird statuary. In ornate script, the sign said "Le Pavillon."

"That looks nice," I said. "Let's go there."

We pulled in off Poydras Street. The Rolls announced its presence within clear view of the front desk. Through the hotel's grand entryway, we saw a man wearing a suit step out from behind the counter. He rushed down the hall and flung open the doors. "How can I help you gentlemen?" he asked, as he ushered us inside.

We gave the usual spiel: "We got robbed. I know it sounds crazy. But look at the car."

"I saw the car," the manager said.

He sighed and rubbed his forehead as our well-practiced pleas continued.

"Well," he continued, "it's my last day. They can't fire me."

And he quoted us the room rate.

"But," he added, "we will hold the car until you sort this out. Even if it takes two or three days."

"That is perfectly fine," Sabatini said.

We'd secured our ultimate bounty, two beds in New Orleans with nary a credit card or driver's license between us. Never mind that we'd actually had to trade our Rolls-Royce for the room key; as we headed to the elevator, we heard the manager calling the valet with explicit instructions not to release the car without an okay from the front desk.

Le Pavillon was all candelabras, weird old paintings, and velvet wallpaper. It is on the National Register of Historic Places, is a member of Historic Hotels of America, and has received AAA's Four Diamond Award consistently since 1996. The hotel also, we later learned, often appears on the list of "most haunted places" in New Orleans with at least four ghosts, though not usually those of the Rolls-Royce variety.

Whatever our point had been, we'd proved it, and then some. Celebrating in our room, we decided that we probably could have pulled the same stunt in a Subaru Legacy. But it had been a lot more fun to do in a Wraith.

Here, then, is the moral of the story: People will help you out if you're driving a Rolls-Royce, less because of the car, and more because they're generally nice and good. At one gas stop, at a station that was no more than a concrete bunker with bulletproof glass, an attendant who spoke little English used his own money to let us fill up. After we drove around the block and returned to pay him back and explain ourselves, he gave us four bottles of water.

We went downstairs to break the news of our extraordinary accomplishment to the manager. A resident of Australia, Nathan Stewart told us that he has seen every episode of *Top Gear* and loves BMW M cars. So we'd been saved by a gearhead after all, one who found the whole story quite amusing.

"Honestly, it would have to have been a pretty crummy car for me to not let you stay," Stewart told us. "Or maybe if it smelled like weed. You make judgment calls. We get scam artists all the time. And even the people we let in aren't always treats. We have people who cook in their rooms or tear all the fire alarms from the walls. The other day, we had one guy who stayed in the exercise room for 18 hours watching TV with his pants off. You guys aren't that bad." ■

← Top left: Statuary? Top hat and tails? Yep, this must be the place. Top right: Sabatini's usual constant chatter finally finds a purpose in the world. Middle left: The lamest production of *Waiting for Godot*, ever. Various: Perfect strangers were invariably kind and charitable.

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LONG-TERM TEST

— 2014 PORSCHE CAYMAN S —

Farewell, *My Lovely*

After 40,000 miles, we find that we still like smooth shiny cars, hard-boiled and loaded with sin. *by Daniel Pund*

I stood beside a Porsche public-relations man at the company's Atlanta headquarters looking for the last time at our long-term Cayman S, determinedly not saying what I wanted to say, which was, "How much money would it take to make this my personal car?"

Even with 40,000 miles on its clock, I knew the Guards Red, lightly optioned Cayman S was out of my reach. Turns out, the PR guy was going through the same quiet calculations: "If the car started at 72 grand and I could get it for its auction price, then..." But the math didn't work for him, either.



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. *long-term test*

I had just driven the thing from the frigid north down to Porsche's tiny bit of Germany in America as a sort of homecoming (and to goof around on the company's little road course). It was like one of those Saturn homecomings in Spring Hill, Tennessee, more than a decade ago. But instead of mediocre economy cars and the people who felt inexplicably passionate about them, I was driving arguably the best all-around sports car on the market. My passion was justified, and I would be leaving without what I'd grown to think of as mine.

I arrived in Atlanta on the very day Porsche announced the Boxster and Cayman would get a new name (718) and confirmed what everyone already knew: That the model would lose, in about a year's time, its gem of a naturally aspirated flat-

six in favor of a new turbocharged flat-four. So integral to the appeal of the Cayman is its delicious exhaust and intake noise that the thought of it going silent—of not getting to experience it again in this particular car or in any future Cayman—was genuinely saddening.

That engine noise was the reason that, when we had optioned our long-termer 15 months before, we chose the \$2825 sport-exhaust option to amplify the aural pleasure. This on a car we were desperately trying to keep to a reasonable sticker price. It's a frivolous option only to those who have no ears.

Otherwise, we resisted the reams of splendiferous options Porsche offers for the Cayman S (and every other model it

↑ In 27.4 acres by the Atlanta airport, Porsche has crammed a mile-long handling course and various other driving-school facilities.

produces). We focused on performance-enhancing fare and ended up with a \$72,545 Cayman S. That's up \$7750 on the base sticker of \$64,795 for a 2014 model. While almost \$8000 is not a small amount of money, it's nothing compared with what's on most Cayman Ss that we see, which regularly top \$90K. Ours included Porsche Torque Vectoring (\$1320), the nonadjustable Sport Suspension (\$1235), the \$800 partially power-adjustable sport seats, and the aforementioned Sport Exhaust System.



2014 PORSCHE CAYMAN S

▼ SPECIFICATIONS

VEHICLE TYPE: mid-engine, rear-wheel-drive, 2-passenger, 2-door hatchback

PRICE AS TESTED \$72,545

BASE PRICE \$64,795

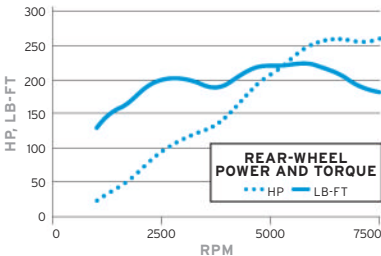
ENGINE TYPE: DOHC 24-valve flat-6, aluminum block and heads, direct fuel injection

DISPLACEMENT 210 cu in, 3436 cc

POWER 325 hp @ 7400 rpm

TORQUE 272 lb-ft @ 4500 rpm

TRANSMISSION 6-speed manual



WHEELBASE 97.4 in
LENGTH 172.4 in
WIDTH 70.9 in
HEIGHT 50.2 in
CARGO VOLUME 15 cu ft
CURB WEIGHT 3025 lb

WARRANTY

4 years/50,000 miles bumper to bumper
 12 years/unlimited miles corrosion protection
 4 years/50,000 miles roadside assistance

MODEL-YEAR CHANGES

2015: A 340-hp GTS model, with a Sport Chrono package and adaptive suspension as standard equipment, joined the lineup.

2016: Porsche's motorsports arm got its hands on a Cayman and created the GT4. It comes with lots of GT3 parts and a 911's naturally aspirated 3.8-liter flat-six making 385 horsepower. A track-only Clubsport version is also available.

Throw in \$670 for satellite radio and the \$900 Convenience package, which included the totally necessary heated seats and the utterly pointless two-zone climate control, and we had a livable, focused sports car, even if we had no USB port, Bluetooth connectivity, or navigation system, and the cheapest-looking steering wheel we've ever seen in a modern Porsche. We also let stand the standard six-speed manual transmission (because we like to roll our own) and the standard 19-inch wheels (because we wanted to maintain some level of ride comfort). Had the GTS model been available at the time we ordered, we would have just opted for that, as it brings a large load of standard equipment for a moderately sized load of extra cash.

One of our staffers hated the standard five-spoke wheels; another wished we'd ordered the adjustable shocks; a few quibbled about the lack of connectivity; most complained at one point or another about the ugly steering wheel; and virtually everyone was amazed at how few creature

▼ C/D TEST RESULTS

PERFORMANCE

	NEW	40,000
ZERO TO 60 MPH	4.2 sec	4.2 sec
ZERO TO 100 MPH	10.0 sec	9.9 sec
ZERO TO 140 MPH	21.2 sec	21.3 sec
ROLLING START, 5-60 MPH	5.2 sec	5.2 sec
1/4-MILE	12.7 sec @ 112 mph	12.6 sec @ 112 mph

BRAKING, 70-0 MPH	145 ft	154 ft
ROADHOLDING, 300-FT-DIA SKIDPAD	1.03 g	1.04 g
TOP SPEED (DRAG-LIMITED)		176 mph
EPA FUEL ECONOMY, CITY/HWY		20/28 mpg
C/D-OBSERVED FUEL ECONOMY		23 mpg
UNSCHEDULED OIL ADDITIONS		4 qt

OPERATING COSTS (FOR 40,000 MILES)

SERVICE (4 SCHEDULED, 2 UNSCHEDULED)	\$3094
NORMAL WEAR	\$814
REPAIR	\$0
GASOLINE (@ \$3.07 PER GALLON)	\$5339

DAMAGE AND DESTRUCTION

REPLACED CRACKED WINDSHIELD	\$880
REPAIR CHIPPED WINDSHIELD	\$50

LIFE EXPECTANCIES (ESTIMATED FROM 40,000-MILE TEST)

FRONT TIRES	65,000 miles
REAR TIRES	25,000 miles
FRONT BRAKE PADS	75,000 miles
REAR BRAKE PADS	more than 100,000 miles

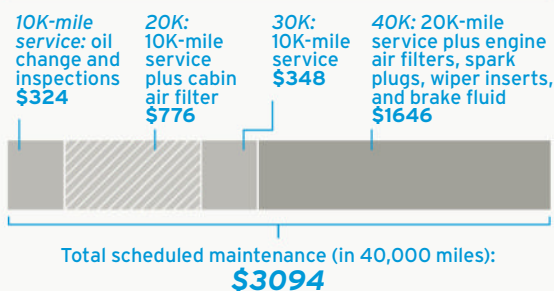
WHAT BITS AND PIECES COST

HEADLAMP (LEFT/RIGHT)	\$1524/\$1500
ENGINE AIR FILTERS	\$100
OIL FILTER	\$46
WHEEL (FRONT/REAR)	\$1302/\$1449
TIRE (FRONT/REAR)	\$324/\$377
WIPER BLADES (PAIR)	\$100
FRONT BRAKE PADS	\$207

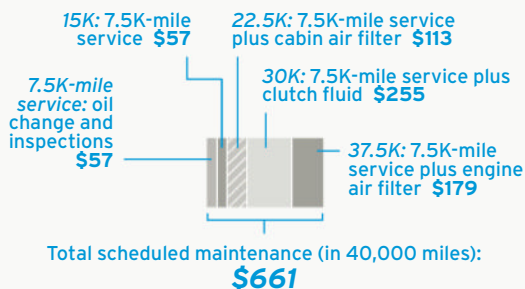
CONCIERGE SERVICE

Just how expensive is service at a Porsche dealership? Expensive. Really expensive. For comparison's sake, have a look at the price of regular maintenance of our 2014 Porsche Cayman S long-term car compared with what we paid for similar maintenance of our 40,000-mile 2014 Chevrolet Corvette Stingray (\$66,575).

CAYMAN S



CORVETTE STINGRAY



RANTS AND RAVES

ERIK JOHNSON

I need more flat-six noise in my life.

K.C. COLWELL

The cup holders are located too far from the roll axis, so a tiny, one-degree disruption results in a coffee volcano.

JEFF SABATINI

The steering wheel is an abomination. The Sport Design wheel was only \$250. We should have ordered that.

ERIC TINGWALL

The suspension is extremely taut, but the damping takes the bite out of every impact.

DON SHERMAN

Driver's back pain starts after four hours in the saddle.

ALEX STOKLOSA

The base sound system isn't bad. I had to check twice to make sure it wasn't the sell-your-children-Burmester setup.

K.C. COLWELL

People may think this is a starter Porsche, but they are asshats. This is the real McCoy.

JENNIFER HARRINGTON

I wish it had an actual dipstick for the engine oil.

CAROLYN PAVIA-RAUCHMAN

Well, that was fun.

JARED GALL

You can fit probably 10 bags of water-softener salt in the frunk.

RUSTY BLACKWELL

The Cayman's engine sound surely plays over the loudspeakers in heaven. At least, my heaven.

EDDIE ALTERMAN

Astounding body control and transitional behavior. Nothing else under \$100K feels this natural.

TONY QUIROGA

Drive it and all its faults are forgiven.



comforts \$72K buys in a modern Porsche. But one drive in the thing and all was forgiven. Its perfectly weighted hyper-accurate steering, smooth clutch takeup, certain shifter, linear power delivery, and neutral handling turned out to be more compelling than a USB socket. Go figure.

The notebook quickly filled with hosannas. “Perfect,” “a doll,” “delicious,” “splendid,” “fantastic,” “excellent.” We pretty much wore out the list of positive adjectives in the synonym section of dictionary.com. And we accumulated miles quickly thanks to the Cayman S’s surprisingly practical two-trunk scheme. This was one sports car that saw plenty of road-trip miles, including journeys to Virginia, Pennsylvania, and North Carolina, among other destinations in the eastern half of the U.S. Our final road trip to Atlanta was by way of the glorious roads of the Blue Ridge Mountains.

While we maintain that a Cayman S is more of a holistic sports car than a platform for delivering stunning performance numbers, the 325-hp 3025-pound Cayman S posted solid test-track figures. Once properly broken in, our car ran a 4.2-second zero-to-60-mph sprint and a 12.7-second quarter-mile time at 112 mph, both a few tenths of a second off the times of the 2014 Chevrolet Corvette Stingray that we also had in the fleet, but the Cayman’s engine never blew up, either [“Half & Half,” December 2015]. The Porsche circled the skidpad with a near



↑ There might have been some head shaking on the part of Porsche employees while looking at the scarred belly of our Cayman S.

neutral demeanor and 1.03 g’s worth of grip and stopped in a stunning 145 feet from 70 mph with zero fade. With 40,000 miles on it, the Cayman matched its earlier acceleration and cornering performance but added nine feet to its braking distance. Several laps of Porsche’s mini road course at its Atlanta HQ revealed that the Cayman S has lost none of its capabilities, grace, or hunger for fast driving. Our only complaint was with the Goodyear Eagle F1 tires. We suspect a different tire would have provided more progressive breakaway characteristics. But the Goodyears were the only summer tires available with the 19-inch wheel package for 2014.

Sports cars are not without their compromises, though. And here we’re not talking about this vehicle’s lack of creature comforts. We opted for the nonadjustable sport suspension in our Cayman S, which drops the car 0.8 inch compared with the already low-slung standard car. It sat there hugging the ground like a pretty red scarab. The downside, other than the occasional clumsy exit from the driver’s seat, was that we needed to approach even moderately steep driveways with the care normally reserved for bomb-squad operations. Our car’s chin bore the scars of the momentarily careless. Worse, someone managed to punch a dent in the underside of the body roughly the shape and size of the speed bumps in our office complex.

But the world was not done abusing the belly of our little beast. We found a titanium-bladed kitchen knife jammed, somehow, into the underside of our Cayman. The blade was lodged between two panels on the passenger's side and was easily removed. The knife was either craftily inserted by a miscreant or was kicked up from the road in the most improbable way. Neither explanation makes much sense, frankly. But the only lasting damage was to our understanding of physics and/or our faith in humanity.

Otherwise, the Cayman S was a better real-world car than the Stingray with which it shared space in our long-term stable. A brutal, face-blisteringly cold winter presented no particular challenge. The Cayman S started quickly and ran flawlessly. It was even fun to drive in the white stuff while wearing its Michelin Pilot Alpin PA4 winter tires, assuming the snowdrifts weren't too high.

↓ Below: Spoiler rises at 75 mph. Middle: Drifting shots are the best. Everyone knows that. Bottom: Why is that man's mouth open?



This is not to say there were no problems. We had a vexing engine-oil-level issue. We added Mobil 1 three times in our first 16,000 miles at the behest of the oil-level sensor, which pops up the dire warning: "Oil level below min. Refill oil at once. Do not drive on." It happened at 1881 miles, again at 7643 miles, and again at 15,774 miles. Then, intermittently, we started getting a warning about the oil level being "above maximum." We drained about a quarter of a quart, even though the warning had already gone away. We took it to the dealer who said the oil level was still almost two quarts too high. We weren't sure if the oil-level sensor was schizophrenic or if we were. But after 16,000 miles we had no further warnings and added no more oil. We suspect we'd gotten bum low-oil readings from the sensor and added oil when it wasn't necessary. Most frustrating: This all probably could have been avoided if the Cayman had a dipstick, which it doesn't.

At 17,785 miles, we took it to the dealership to replace, under warranty, a broken washer-fluid line. At 29,637 miles we returned to the dealership to investigate a rattling noise we began to hear coming from the steering column or dash. Turns out the culprit was a left-front-strut upper bearing and support, which the dealer replaced under warranty. By the end of its stay with us, the Cayman's Cayman-shaped remote key fob locked and unlocked doors only intermittently. The dealer replaced it free of charge.

Other repairs included a new windshield to replace the rock-shattered original. That ran us \$880. At 34,880 miles, the rear tires were riding on the wear bars and making a helluva racket. Those cost a total of \$814 to buy and have mounted.

The only bills that seemed excessively high, though, were those for routine service. Simple oil changes and inspection visits cost us \$324 at 10,000 miles (including \$188 in labor costs) and \$348 at 30,000 miles. At the 20,000-mile service, the dealer did the normal oil change and inspections but also included two engine air filters and a cabin air filter. That cost a staggering \$776, \$540 of which was the labor charge. The 40,000-mile service, which included an oil change, air-filter changes, cabin-air-filter change plus spark plugs, windshield-wiper inserts, and fresh brake fluid, cost \$1646.

On the upside, we paid for nothing else but wear-and-tear items. So, y'know, maybe I could make the monthly nut on a used Guards Red Cayman S. It's just money. ■

★ FLEET FILES



▲ 2015 BMW M3

34,870 MILES

22 OBSERVED MPG

With but a few thousand miles left in our M3 test, we have resigned ourselves to running the clock out on a disappointing season. There is a dichotomy in the M3: It wins comparison tests and generates astonishing track numbers, but it's also the car we deal with in the real world outside of these glossy pages. The latter crashes noisily over the speed bumps in our parking lot and occasionally emits strange noises from its front end when turning left at low speed. Even after many months, our dealer remains flummoxed. When it comes to this beautiful-looking M3, so are we.



▲ 2016 MAZDA MX-5 MIATA

2426 MILES

30 OBSERVED MPG

We took delivery of our long-term Club-edition Miata manual just before winter set in, so we can't yet offer any purple prose about wind-in-our-hairpiece motoring. But we have taken our Ceramic Metallic roadster to the proving grounds, where it posted quite respectable numbers: zero to 60 mph in 5.8 seconds, 0.88 g of skidpad grip, and a 158-foot stopping distance from 70 mph. Laudable figures aside, the Miata remains a driver's car, not a numbers car. And already the logbook is filling with exaltations, at least from those staffers able to fit comfortably in this shrink-wrapped dumpling.

LAMBO HURACÁN LP580-2 / MINI COOPER CLUBMAN / CHEVY MALIBU HYBRID / AUDI TTS / MAZDA MX-5 MIATA GT AUTO / 2017 MERCEDES GLS



• HATCHBACK

BMW X1 xDRIVE28i

TESTED □ Fetching interior trim, highly versatile back seat. □ Slight performance loss, front-drive gremlins emerge at the cornering limit. *by Don Sherman*

■ We warned you this was coming. After a half century spent in the righteous pursuit of driving excellence—rear-wheel drive, spunky four- and six-cylinder engines, near-50:50 weight distributions—BMW clicked its corporate turn signal to veer off in a dastardly direction. The kidney-grilled, Hofmeister-kinked X1 xDrive28i featured here is the first of a troop of front-drive-based BMWs destined for the land of the brave.

Why is this happening? Because U.S. buyers want crossovers—boxy vehicles made out of car parts—and the more the better. In 2015, more than 4 million were sold, and they're expected to top the combined sales of compact and mid-size sedans this year. Responding, BMW swallowed its sporting pride to feed America's ravenous crossover appetite.

The previous X1 was a wagon in drag; its replacement is tall enough not to be confused with a car. By moving to a front-

↑ The X1 doesn't look like heresy. And it doesn't look like a Mini Clubman, either. It looks pretty much like the other BMW SUVs.

drive platform [see sidebar], BMW achieved some notable gains while stomach-aching inevitable sacrifices.

And yet, this X1 still drives like a car while serving as a truck. BMW has wisely configured it to go toe to toe in the thriving premium compact-crossover category with arch rivals Audi Q3, Lexus NX, and Mercedes-Benz GLA.

Thanks to a front-seat height raised by 1.2 inches, you slide straight into the saddle with no up or down movement. The X1's interior is beautifully furnished in two shades of French-stitched leather, lovely dark-oak paneling (optional), matte chrome, and piano-black accents. An intelligent mix of knobs and buttons



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WHITELINE

takes the hassle out of adjusting the climate control, making a call, or navigating your way to a restaurant. The 6.5-inch dashtop display screen provides a clear look at both the X1's soul and the world at large; an 8.8-inch screen is optional. A huge, double-panel sunroof, part of the \$3250 Premium package (or \$1350 on its own), brightens the interior mood. While the front seats are impressively bolstered and upholstered, they're a bit too narrow.

Mostly, though, it's the rear compartment that surprises and delights. Passengers ride higher than before, with a better view of their surroundings thanks to the X1's sensible beltline. The more compact powertrain layout also yields 1.5 inches more rear legroom in standard trim, or an additional 2.6 inches with the \$300 slide-and-recline seating option.

Behind the seats there's a 27-cubic-foot cargo hold—up two cubic feet—plus a bonus four cubic feet of stash space under the floor panel. Load height is a handy 28 inches. The power-operated hatch can be opened by swinging a foot under the rear bumper. BMW offers no hitch option,

though all X1's are at least wired to accommodate trailers.

The best news about the X1's driving dynamics: There's little hint that the front wheels do most of the work. The steering is quick and keen to respond, though loath to provide any real feedback from the road. The standard M Sport suspension's ride motions are taut, even in the softest of the three driving dynamic settings, and you feel bumps you can't even see. Those you do see hurt more.

The payoff for this pain is back-road agility, a rare find in crossovers. Rock-and-roll motions are tightly contained, and there are occasional hints of sports-car wannabe syndrome. That said, when the X1 is pushed past eight-tenths, the truth comes out; the standard 225/50R-18 Pirelli Cinturato P7 All Season tires lack grip, and there's awkward understeer plus some up-and-down bobbing at the adhesion limit. This rubber is also likely the cause of the longish, 180-feet-from-70-mph stopping distance that we measured. Optional, grippier 19-inch tires are available for \$600.

BMW mastered smooth, sweet four-

▼ SPECIFICATIONS

VEHICLE TYPE: front-engine, 4-wheel-drive, 5-passenger, 4-door hatchback

PRICE AS TESTED \$45,920

BASE PRICE \$35,795

ENGINE TYPE: turbocharged and intercooled DOHC 16-valve inline-4, aluminum block and head, direct fuel injection

DISPLACEMENT 122 cu in, 1998 cc

POWER 228 hp @ 5000 rpm

TORQUE 258 lb-ft @ 1250 rpm

TRANSMISSION: 8-speed automatic with manual shifting mode

DIMENSIONS

WHEELBASE 105.1 in

LENGTH 175.4 in

WIDTH 71.7 in

HEIGHT 62.5 in

PASSENGER VOLUME 98 cu ft

CARGO VOLUME 27 cu ft

CURB WEIGHT 3736 lb

▼ C/D TEST RESULTS

ZERO TO 60 MPH 6.4 sec

ZERO TO 100 MPH 16.9 sec

ZERO TO 120 MPH 27.6 sec

ROLLING START, 5-60 MPH 7.2 sec

1/4-MILE 14.9 sec @ 94 mph

TOP SPEED (governor limited) 129 mph

BRAKING, 70-0 MPH 180 ft

ROADHOLDING, 300-FT-DIA SKIDPAD 0.87 g

FUEL ECONOMY

EPA CITY/HWY 22/32 mpg

C/D OBSERVED 25 mpg

TEST NOTES:

Pirelli Cinturato P7 All Season tires put a crimp on braking and cornering performance.

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cylinder engines ages ago, and the X1's new turbocharged 2.0-liter largely lives up to the brand's elite standards. It collaborates with the new eight-speed wide-ratio Aisin automatic to provide vigorous thrust with no commotion. While the EPA figures—22 mpg city, 32 highway—are unchanged from the old rear-drive model, we saw 25 mpg in this test, a gain of 1 mpg over the 2013 X1 that survived our 40,000-mile enduro.

Unfortunately, peak power drops from 241 to 228 horsepower, yielding slightly slower 60-mph (6.4 seconds) and quarter-mile (14.9 seconds at 94 mph) times, in spite of a curb weight 88 pounds lighter than the outgoing X1. And because the automatic insists on upshifting at 6500 rpm, even in manual mode, the 7100-rpm redline is window dressing. While the console shifter is entirely adequate, those longing for shift paddles can get them by adding the \$2450 M Sport package. Those longing for a manual can go pound sand; one is not available.

Overall, we have mixed feelings about BMW's migration in the front-drive direction. Even though the new X1 will surely excel as a competitive luxury crossover, we don't see it as one of the brighter stars in BMW's firmament.

BMW'S FIRST FRONT-DRIVE BLUEPRINT.

The BMW Group has engineered front-drive Mini Coopers since 2001 as the opening act for the subversive X1. Its new UKL2 platform, shared with the Mini Cooper Clubman [see page 088] and the BMW 2-series Active Tourer (not destined for sale here), has a classic, tightly packed transverse-powertrain layout that will underpin many future BMWs and Minis.

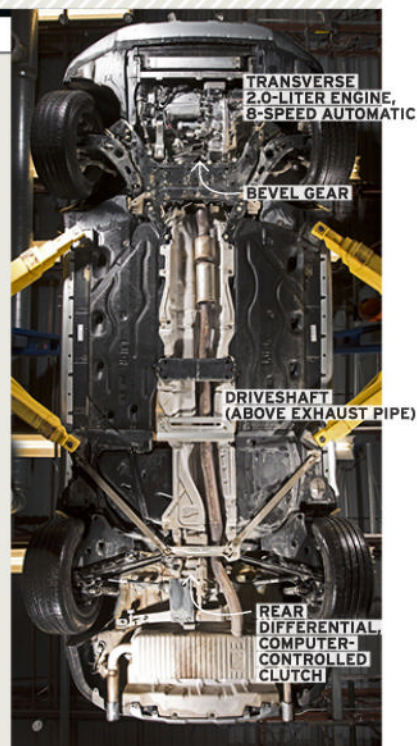
Mounting the engine crossways not only saves space, it also cuts frictional losses by a few percent since the crankshaft and the front axle rotate on parallel axes. Three- and four-cylinder gas and diesel powerplants are part of this strategy. While a simple on-demand four-wheel-drive system is standard in the X1, a less expensive front-drive edition is also expected. The driveshaft and two bevel gears necessary to power the rear wheels naturally increase driveline friction.

The eight-speed Aisin automatic spins both the front wheels and the longitudinal driveshaft. An electronically controlled clutch pack built into the rear differential engages the back wheels when desired. This is a slippery-road traction device, not a scheme to vector torque for more-agile handling.

A simple suspension system—struts in front, trailing arms located by upper and lower lateral links in back, four coil springs—saves weight, cost, and space.

The bottom line is a more efficient shipping container.

Versus the outgoing X1 hatch, the new crossover is 1.7 inches taller, 0.9 inch wider, 1.1 inches shorter, and 88 pounds lighter. The wheelbase was shortened 3.6 inches to a tidy 105.1 inches. Functional gains include a more useful back seat and two additional cubic feet of cargo space.



LAMBORGHINI HURACÁN LP580-2

This slightly detuned rear-wheel-drive Huracán is sideways at any speed. *by Mike Duff*

As art imitates life, so the favor is returned. Virtual Lamborghinis have been featured in driving games from 1987's genre-defining *Test Drive* on down. Now the company has developed a new model—seemingly aimed at those who have grown up with video games—that lets you drift your virtual supercar with pixel-perfect precision.

That's certainly what we took from the technical briefing that introduced us to the new rear-wheel-drive Huracán LP580-2 at the Losail circuit in Qatar. Maurizio Reggiani, Lamborghini's R&D boss, mentioned power oversteer a half-dozen times during his presentation, his words delivered against a backdrop of Huracáns drifting in superslow motion. Vaughn Gittin Jr. must have a rich Italian cousin.

While this rear-driven Huracán is the cheapest path to new-Lambo ownership, it's also being pitched as a more involving drive, trading some of the Huracán LP610-4's outright performance for the

excitement that comes from having more power than grip. It was developed alongside the four-wheel-drive car and in the plan at the outset, unlike the rear-drive Gallardo that was pretty much a drive-shaft-ectomy. With the loss of the clutch pack and related hardware, the Huracán drops 73 pounds.

As the numbers in the name suggest, the LP580-2's mid-mounted 5.2-liter V-10 has been slightly detuned to 572 horsepower. Both the engine speed at which peak power arrives and the fuel cutoff have fallen by 250 rpm compared with the 602-hp LP610-4, dropping to 8000 and 8500 rpm, respectively. When we speculated as to whether this modest output reduction was done to ensure that the cheaper, lighter car was not faster than its more expensive sister, nobody at Lamborghini looked too outraged. Although

↓ Despite subtle changes to the front and rear fascias, the rear-drive Huracán still looks like a big, delicious piece of orzo.

▼ SPECIFICATIONS

VEHICLE TYPE:	mid-engine, rear-wheel-drive, 2-passenger, 2-door coupe
BASE PRICE	 \$204,595
ENGINE TYPE:	DOHC 40-valve V-10, aluminum block and heads, port and direct fuel injection
DISPLACEMENT	 318 cu in, 5204 cc
POWER	 572 hp @ 8000 rpm
TORQUE	 398 lb-ft @ 6500 rpm
TRANSMISSION:	7-speed dual-clutch automatic with manual shifting mode
DIMENSIONS	
WHEELBASE	 103.1 in
LENGTH	 175.6 in
WIDTH	 75.7 in
HEIGHT	 45.9 in
CURB WEIGHT	 3350 lb
PERFORMANCE (C/D EST)	
ZERO TO 60 MPH	 2.9 sec
ZERO TO 100 MPH	 6.4 sec
1/4-MILE	 10.8 sec
TOP SPEED	 199 mph
FUEL ECONOMY (C/D EST)	
EPA CITY/HWY	 14/21 mpg

Reggiani says the engine has also been digitally calibrated with a flatter torque curve better suited to, you've guessed it, going sideways.

Performance losses are minimal. Lamborghini's claimed 3.4-second zero-to-62-mph time is two tenths behind the claim for the LP610-4, but the advantage seems to be due entirely to the latter's superior traction. The quoted top speed of 199 mph is 3 mph off the 610's 202 mph, which is unlikely to be an issue for anyone but latter-day moonshine runners.

Unfortunately, we didn't get a chance to drive the LP580-2 on-road, only on the Losail circuit located at the edge of the desert near Doha. Having seen Qatar's roads on our way to the track, we can report this as no great loss. The entire





country seems to be either sand, a construction site, or some combination of the two. But it does mean that we traveled all the way to the Middle East for the grand total of 16 laps of this 3.34-mile track, best known for hosting a round of the MotoGP championship. Weep for us.

The good news is that very few people will realize you are driving what amounts to the base version. Apart from slightly redesigned front and rear bumpers, the 580 looks identical to the 610, projecting an equal amount of wedgy aggression and kinship with the Aventador. The Huracáns' cabins are identical, the underlying Audi architecture well hidden, and the exterior's sharp-yet-curved design theme carries throughout. Even the steering wheel has corners.

The loss from both sides of the power-to-weight equation leaves the 580 feeling exactly as rapid as we remember the 610 being. In short, very. The engine remains a masterpiece, one that growls, snarls, and ultimately screams its way toward its stratospheric redline, and with the sort of perfectly proportional throttle response that makes your foot feel as if it can add horsepower one nag at a time. Experiencing it again is instant vindication of Lamborghini's decision to stand against the rising tide of turbocharging. We

↑ The coolest part about drifting a Huracán LP580-2 is that if you crash it, you simply restart the game, just like in *Test Drive*.

remain happy to trade its relative lack of low-end torque for its sonorous high-revving fervor—on a track, at least.

As in the Huracán LP610-4, there are three switchable “ANIMA” dynamic modes for the steering, engine, gearbox, and (optional) switchable dampers. The *strada* (road) and *corsa* (track) modes remain as before, but the intermediate sport setting has been repurposed into what is basically a drift mode. It slips the leash of the Huracán's stability control to allow the greatest amount of angle and actually softens the optional adaptive dampers to help with oversteer-inducing load transfer. The dual-clutch automatic shifts quickly and cleanly when instructed to do so by the long, behind-the-wheel paddles, but, sadly, Lambo's commitment to driving purity doesn't include offering a manual alternative.

The magic sideways mode works pretty much as promised. With sport engaged, you power into a turn to find an initial dose of understeer acting as a sort of dynamic liability waiver. Indicate consent by continued application of the throttle and the Huracán transitions into oversteer with a grace that makes you suddenly consider a career in professional drifting. The back end steps out, and if you stay on the gas and keep the steering pointed in the right direction, the LP580-2 will hold this slide for pretty much as long as you want. The stability system only intervenes if the car gets close to spinning. This is a supercar that's as easy to drift on a bone-dry racetrack as a Mazda MX-5 Miata is on a frozen lake.

It's a really neat trick, one we used on a fair number of our allotted 16 laps—confirming that even in faster third- and fourth-gear turns, the Huracán is happy to do it. You can almost persuade yourself that this is merely natural affirmation of your own God-given talent, but you do ultimately realize that this is just a digitally delivered simulacrum. Especially in the way the electric-power-assisted steering lightens and tightens as course-correcting brake inputs are sent to the front end by the stability-control system, and also in the mode's tolerance for the sort of big throttle inputs that should fire the Huracán backward into one of Losail's gravel traps.

We actually preferred the Huracán in its more aggressive *corsa* mode, which works to maximize grip over slip while still allowing the occasional slide. It showed the 580 capable of finding adjective-stretching traction despite its relative lack of driven wheels.

Perhaps the greatest challenge facing supercar makers today is figuring out how to maintain excitement levels in a world of both spiraling power outputs and advanced dynamic systems that can tame practically anything. Or—how to build a car that can thrill a modestly talented millionaire without killing him. That's what his helicopter is for. The Huracán LP580-2 is perhaps the best answer yet to that question.



▼ SPECIFICATIONS

VEHICLE TYPE:	front-engine, front-wheel-drive, 5-passenger, 4-door hatchback
BASE PRICE	 \$24,950–\$28,500
ENGINES:	turbocharged and intercooled DOHC 12-valve 1.5-liter inline-3, 134 hp, 162 lb-ft; turbocharged and intercooled DOHC 16-valve 2.0-liter inline-4, 189 hp, 207 lb-ft
TRANSMISSIONS:	6-speed manual, 6-speed automatic with manual shifting mode, 8-speed automatic with manual shifting mode
DIMENSIONS	
WHEELBASE	 105.1 in
LENGTH	 168.3 in
WIDTH	 70.9 in
HEIGHT	 56.7 in
PASSENGER VOLUME	 90–93 cu ft
CARGO VOLUME	 18 cu ft
CURB WEIGHT	 3100–3300 lb
PERFORMANCE (C/D EST)	
ZERO TO 60 MPH	 6.7–8.2 sec
ZERO TO 100 MPH	 18.1–22.3 sec
1/4-MILE	 15.3–16.4 sec
TOP SPEED	 127–142 mph
FUEL ECONOMY	
EPA CITY/HWY	 22–25/32–35 mpg

MINI COOPER CLUBMAN

Your cool uncle is in town, and he's driving a Clubman. *by Andrew Wendler*

With the debut of the 2016 Cooper Clubman, Mini has conjured a new identity: the cool uncle. The way Mini spins it, every family has one, a worldly type on the fringe who follows his own path and radiates an air of distinction. At least until the cool aunt throws the deadbeat out. Still, Mini claims to want to be that uncle, and it's starting with the Clubman. To find out if the new car is worthy of the requisite rare vinyl, pewter flask, and Barcelona chairs, we borrowed a pair of 2016 Clubmans.

Now with two full rear doors where there was only a single half-door, the car has grown 12.4 inches in length to 168.3. That's 0.8 inch longer than the Volkswagen Golf four-door.

While the driver and front-seat passenger see minimal changes, shoulder room in the rear has increased by a significant 6.9 inches to a usable-by-actual-humans 52.8-inch total. Shame about the rock-hard bottom of the rear-seat cushion.

Cargo space is the real winner here, the enlarged Clubman offering 48 cubic feet of luggage volume with the rear seats folded—15 more cubic feet than before.

Producing 134 horsepower and 162 pound-feet of torque, the 1.5-liter turbo three-cylinder is nothing if not consistent. Full grunt comes on at 1250 rpm, and it maintains that pull to 4300 rpm. Steep

↑ Above: The Clubman looks like a Mini designed for Stretch Armstrong. Right: Quiet interior. Bottom right: Psst! Your barn doors are open.

grades require skipping down a gear or three, but the clutch action is light and the shifter offers decent feel.

The Cooper S steps up to the 189-hp turbo four. With 207 pound-feet of torque funneled through the optional eight-speed sport automatic (\$1750), it's easy to hustle the Cooper S Clubman to triple-digit speeds and to stay there without any complaints from under the hood. Around town, the extra thrust imbues the Clubman with the point-and-squirt capabilities that make driving small cars so appealing.

One area of disappointment is the exhaust note. It's not particularly throaty with either engine, even in sport mode.

Which brings us to the Clubman's single most revelatory quality: silence. All the usual Mini noises—road noise, wind noise, body squeaks and rattles, crude window-motor operation—are pleasantly absent here. Mini has also bumped up the quality of the interior plastics a notch.

The 14.2:1 electrically assisted steering could be a little more communicative. And we wouldn't complain if effort increased a



little earlier in the turn. While easy to modulate, the brake pedal doesn't engage you in any meaningful manner, even if the brakes themselves do haul you down from high speeds with a competent brevity.

In typical Mini fashion, the option sheet lets you build your car just about any way you want. That's nice, but it's not the most cost-effective approach. The Cooper S Clubman that we drove stickered at \$39,550, up \$11,050 from its base price.

My cool uncle? After blowing his college fund on Aspen slopes, he set out for Martha's Vineyard, where he met a nice girl from Long Island. They moved to Florida and bought a Chevrolet Suburban with the rear barn doors. At least he got that detail right.

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CHEVROLET MALIBU HYBRID

The fact that it's not a big deal is what makes it a big deal. *by Tony Quiroga*

Tell anyone that the new Chevy Malibu hybrid shares much of its powertrain with the Volt and they'll inevitably ask how far it can go in EV mode. Answer: not far. Unlike the Volt, the Malibu hybrid is set up to maximize fuel economy from a running engine, not to stretch electric range. Wait till you tell them you can't even plug it in.

Instead, there's this: 48 mpg city and 45 highway. Those projected EPA numbers are high enough to beat the hybrid versions of the Ford Fusion, Hyundai Sonata, Kia Optima, and Toyota Camry. It might not beat the Honda Accord hybrid's 50/45 figures, but that car is on hiatus until 2017 as production moves to Japan.

Pulled directly from the Volt are the two electric motors with integral transmission and the regenerative braking system. There are two major differences, however: the engine and the battery. Under the aluminum hood is a 122-hp 1.8-liter four-cylinder instead of the Volt's 101-hp 1.5-liter four. GM deemed a larger engine necessary because the Malibu relies on its gas burner more often, the battery pack being a mere fraction of the Volt's. The Malibu's 1.5-kWh battery sits in the trunk; the Volt has a tall, T-shaped 18.4-kWh pack running up its spine.

Tucked just behind the rear seats, the Malibu's battery reduces trunk volume from 16 cubic feet to 12. And while the rear seats still fold, the battery mostly blocks the pass-through. Hybrid hardware isn't light, either. The hybrid weighs 371 pounds more than a base Malibu with the 1.5-liter engine.

There's no EV-mode button to lock it into electric drive—or any other setting. Chevy claims that it's already set up for maximum efficiency and that driver input isn't necessary. Being light enough on the throttle to stay in EV mode up to any

significant speed is challenging, although a digital display is there to help, informing the driver how deeply the accelerator can go before it fires the engine.

When the engine kicks on, it does so quietly and without much vibration. Under moderate to hard acceleration, the hybrid system feels and sounds a lot like a conventional sedan with a CVT. The system holds engine revs at a constant rpm, and the car moves forward without gearshifts or changes in pitch. From a stop, the acceleration to 40 or so mph comes with a strong shove and wheelspin, the combined system's 277 pound-feet of torque hitting hard and fast. In a passing situation, the electric motor boosts the gas engine with a satisfying surge.

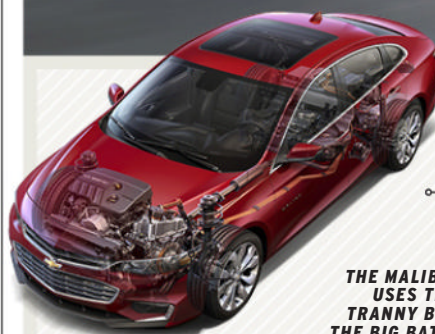
Lifting off the accelerator sends some charge back to the battery. Apply the brakes gently to increase the electrical regeneration, or select L1 or L2 on the gearshifter to increase the amount of resistance from the motor. Borrowed from the Volt, the Malibu's braking system seamlessly blends the braking done by the motor-turned-generator and the disc brakes. The pedal feels linear and normal, which can't be said of many other hybrids.

▼ SPECIFICATIONS

VEHICLE TYPE: front-engine, front-wheel-drive, 5-passenger, 4-door sedan	
BASE PRICE	\$28,645
ENGINE TYPE: DOHC 16-valve 1.8-liter Atkinson-cycle inline-4, 122 hp, 129 lb-ft; 2 permanent-magnet synchronous AC electric motors, 74 and 102 hp; combined system, 182 hp, 277 lb-ft	
TRANSMISSION: continuously variable automatic	
DIMENSIONS	
WHEELBASE	111.4 in
LENGTH	193.8 in
WIDTH	73.0 in
HEIGHT	57.7 in
PASSENGER VOLUME	103 cu ft
TRUNK VOLUME	12 cu ft
CURB WEIGHT	3700 lb
PERFORMANCE (C/D EST)	
ZERO TO 60 MPH	7.5 sec
ZERO TO 100 MPH	23.0 sec
1/4-MILE	15.7 sec
TOP SPEED	130 mph
FUEL ECONOMY (MFR'S EST)	
EPA CITY/HWY	48/45 mpg

Visually, there are a few subtle tweaks to reduce drag, such as additional radiator shutters and a slightly lower ride height. Otherwise, the Malibu hybrid is a dead ringer for the conventional model. Even the tires are the same; no rock-hard, low-rolling-resistance rubber or 45-psi pressures here.

With a base price of \$28,645, the Malibu hybrid is \$2750 more than a regular LT and on par with other hybrid sedans. What its buyers will get is the soul of a Volt with the space of a mid-size sedan, and a Malibu with nearly the fuel economy of the outgoing Prius. That's worth crowing about.



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AUDI TTS

TESTED Thrilling grip, massive thrust, instant reflexes. Self-referential styling, skimpy accommodations, hard-core ride, philosophically spent. *by John Pearley Huffman*

Audi's TT has never been a car for everyone. But now it's tough to know if it's a car for anyone. It's in an existential crisis, a tiny high-style coupe adrift in an ocean of SUVs. And now, with the 2016 TTS coupe, it has 292 horsepower with which to explore the boundaries of being and nothingness.

Much of what turns the TT into a TTS is the same stuff that twists an A3 into an S3, or Volkswagen's GTI into a Golf R. That includes the higher-performing version of the group's turbocharged and direct-injected 2.0-liter iron-block four-cylinder. Running its own cylinder head, pistons, turbocharger, higher-pressure fuel-injection system, and other tweaks that separate it from more-plebeian versions, this four is beastly.

But while the TTS engine's 292 horsepower is 72 more than the 220 in the regular TT, its 280 pound-feet of peak torque is only a tame 22 pound-feet stronger than the base TT's. And that torque peak comes later—1900 rpm instead of 1600—and runs out longer, to 5300 rpm instead of 4400. It takes merciless throttle usage to get maximum thrust from this engine. Feather-

foot it and it's just a base Golf rented at the Antwerp airport.

A dual-clutch, six-speed automatic transmission (S tronic in Audi-speak) running closer ratios than in the regular TT is mandatory. The computerized shifting is impeccable, and it's slick when shifted with the paddles, but it's no manual gearbox. It's inhumane that a more direct connection between the driver and his or her gears isn't available in this car.

Arm the launch control, throw a rock at the accelerator, and hang on as the Quattro four-wheel drive sinks the optional 255/30R-20 P Zeros' claws into the tarmac. The TTS wallops 60 mph in 4.2 seconds, or

↓ Odd that the TTS's manual-transmission shifter has markings for P, R, N, and D but no gear numbers. How embarrassing for Audi.



SPECIFICATIONS

VEHICLE TYPE: front-engine, 4-wheel-drive, 4-passenger, 2-door hatchback
PRICE AS TESTED \$59,100
BASE PRICE \$52,825
ENGINE TYPE: turbocharged and intercooled DOHC 16-valve inline-4, iron block and aluminum head, direct fuel injection
DISPLACEMENT 121 cu in, 1984 cc
POWER 292 hp @ 6200 rpm
TORQUE 280 lb-ft @ 1900 rpm
TRANSMISSION: 6-speed dual-clutch automatic with manual shifting mode
DIMENSIONS
WHEELBASE 98.6 in
LENGTH 165.0 in
WIDTH 72.1 in
HEIGHT 52.8 in
PASSENGER VOLUME 74 cu ft
CARGO VOLUME 12 cu ft
CURB WEIGHT 3220 lb

C/D TEST RESULTS

ZERO TO 60 MPH 4.2 sec
ZERO TO 100 MPH 10.7 sec
ZERO TO 130 MPH 20.6 sec
ROLLING START, 5-60 MPH 5.6 sec
1/4-MILE 12.8 sec @ 108 mph
TOP SPEED (gov limited, mfr's claim) ... 155 mph
BRAKING, 70-0 MPH 157 ft
ROADHOLDING, 300-FT-DIA SKIDPAD 0.98 g
FUEL ECONOMY
EPA CITY/HWY 23/27 mpg
C/D OBSERVED 21 mpg

TEST NOTES:

Extracting a 4.2-second zero-to-60 and nearly 1.0 g on the skidpad shouldn't be this easy. But the TTS makes a tester's life a cinch.



1.0 second better than the plain TT and 0.2 ticks quicker than the 80-pound-heavier Audi S3 sedan. This is a four-cylinder production car that runs the quarter-mile in 12.8 seconds at 108 mph, 0.7 second and 4 mph quicker than the old TTS.

Those big tires have teensy sidewalls, however, so to whichever mode you set the magnetic-ride shocks, there's always spine-slammng potential. But turn-in is immediate, adhesion is immense (0.98-g skidpad twirl), and the TTS's larger-diameter disc brakes may stop the universe's decomposing entropy.

With a starting price of \$52,825, the TTS sits alongside the purebred, mid-engined Porsche Cayman's \$53,595. The test car came in at a lofty \$59,100. And there's too much performance in genetically similar, cheaper, and more-useful cars such as the S3 and Golf R.

This third-generation TTS is often brilliant, but its style is a digressive comment on the deconstructed second-generation TT's reinterpretation of the first generation. It's all so meta—and unmoored from the market. The TT's novelty is gone, though what remains drives great.

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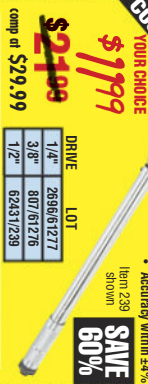
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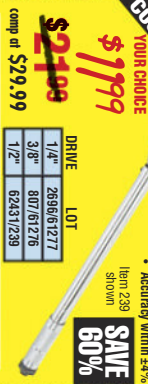
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MAZDA MX-5 MIATA GT AUTOMATIC

TESTED Thoroughly modern features include clutchless gear selection and comfortable leather seats. GT mod cons add mass, the manual version is quicker, worse real-world mpg. *by Kevin A. Wilson*

The Mazda MX-5 Miata stirs the road poets among us to romantic motoring reverie. Traffic-free dawns on challenging canyon two-lanes, adrenaline-rush track days, the after-dinner getaway with your one-and-only. That stuff inspires Miata drivers to get out there, to *carpe* every damned *diem* and double-clutch down on it.

However, Mazda also sells MX-5s to people who live where all the corners are 90 degrees, the land is flat, and the traffic gets worse every year. Which may be why more Miata buyers go for automatics today than when the first-generation car offered a four-speed slushbox in the 1990s. A minority of buyers wanted slush then, but by 2011 almost half of the car's sales were slushy, and Mazda projects "north of 50 percent" for the new MX-5.

The mere idea of a Miata with a dead mackerel between the seats was such a drag that we didn't even bother track-testing one until 2006. That was when a new six-speed and paddle-shifter combination

arrived, and we found it was, well, not so horribly bad. We can't ignore the clutch-pedal-free Miata as we once did.

Suitably, our slush-o-matic Miata test car arrived in Grand Touring, the priciest and plushiest of MX-5 trim levels. We've tested the manual Miata in Club trim, which brings performance-enhancing hardware such as a limited-slip differential and a sport-tuned suspension. Grand Touring sets all that aside and instead includes rain-sensing wipers, navigation, and heated, leather-trimmed seats.

Then this munchkin Lexus goes over the top with blind-spot monitoring, cross-traffic alert, lane-departure warning, and adaptive lights with automated high-beam control. Choosing a GT moves the base price up to \$30,885, and the automatic trans adds another \$1205. (On the base Sport model, the automatic upcharge is \$1480, while on the Club it's only \$730.)

↓ Opting for the automatic transmission in a Miata is opting out of one of the Miata's greatest attributes. But, hey, it's your money.



▼ SPECIFICATIONS

VEHICLE TYPE:	front-engine, rear-wheel-drive, 2-passenger, 2-door convertible
PRICE AS TESTED	\$32,090
BASE PRICE	\$32,090
ENGINE TYPE:	DOHC 16-valve Atkinson-capable inline-4, aluminum block and head, direct fuel injection
DISPLACEMENT	122 cu in, 1998 cc
POWER	155 hp @ 6000 rpm
TORQUE	148 lb-ft @ 4600 rpm
TRANSMISSION:	6-speed automatic with manual shifting mode
DIMENSIONS	
WHEELBASE	90.9 in
LENGTH	154.1 in
WIDTH	68.3 in
HEIGHT	48.8 in
PASSENGER VOLUME	49 cu ft
TRUNK VOLUME	5 cu ft
CURB WEIGHT	2383 lb

▼ C/D TEST RESULTS

ZERO TO 60 MPH	6.4 sec
ZERO TO 100 MPH	18.1 sec
ZERO TO 120 MPH	32.6 sec
ROLLING START, 5-60 MPH	6.7 sec
1/4-MILE	15.1 sec @ 93 mph
TOP SPEED (C/D est)	125 mph
BRAKING, 70-0 MPH	158 ft
ROADHOLDING, 300-FT-DIA SKIDPAD	0.90 g
FUEL ECONOMY	
EPA CITY/HWY	27/36 mpg
C/D OBSERVED	28 mpg

TEST NOTES: Lack of ability to spin the drive tires impedes acceleration. Limit handling is neutral; wind noise, excessive.



Besides costing money, the automatic costs a bit of performance: half a second to 60 mph and about the same in the quarter-mile. Easy as it is to blame the trans, another factor is that this GT automatic is 74 pounds heavier than the manual Club. In a light two-seater, that's significant.

Despite the extra weight and the lack of the sport-oriented chassis hardware, this car cornered at the same 0.90 g and stopped in the same 158 feet. It felt, perhaps, a little less crisp in response to controls than the Club.

In subjective terms, the automatic didn't hurt as badly as we'd feared. In sport mode, the latest paddle-shift mechanism works just as we'd like, delivering crisp gearchanges and holding the selected ratio to the fuel cutoff. In normal driving, with the trans in auto mode, there's nothing to object to except a lack of engagement.

Perhaps the days of soul-sucking, joyless automatics are behind us, but we'd like to see what Mazda could do with a dual-clutch automatic in this car. As it is, this automatic made stop-and-go traffic jams painless without seriously impeding the fun when we escaped the crowd.

But the Miata we just added to our long-term fleet? It has the manual transmission. We're incurable romantics.



• HATCHBACK

2017 MERCEDES-BENZ GLS-CLASS

A Benz by any other name would swell so big.

by K.C. Colwell

Changing your name is a right pain in the neck, you know. You've got the DMV, Social Security, and the IRS to deal with. File all the paperwork, and you still have to convince your friends to call you D'artagnan. While Mercedes didn't have to deal with bureaucrats after deciding to change the names of some of its models, it does have to convince its friends (a.k.a. paying customers) that the new names are worth learning and remembering.

Mercedes SUVs now start with "GL" followed by a size-related letter carried over from the car line. Thus, the smallish GLK is now GLC (C-class), the middle ML is the GLE (E-class), the giant GL becomes the GLS (you get the picture). The boxy G-class remains just G, as it is the O.G. of Benz four-wheelers.

Otherwise, the 2017 changes to the GL-cum-GLS exterior are minor. New bumpers and revised head- and taillamps give the sense of something new, but the overall shape is all old GL.

Changes to the interior are less subtle. Mercedes redesigned the instrument panel and center console, installing a control-wheel-supplemented touchpad and a center screen on the dash that looks thin and delicate enough to be ripped from its perch and tossed rearward to quiet a tantrum.

The cabin earns the S-class suffix, even if, mechanically, the GLS has little relation to the S-class aside from the powertrain and electronics. It's quiet and serene, and



↑ Does this vehicle look new to you? It is. But the majority of that newness is inside the cabin and under the transmission tunnel.

so are most of the major controls. A brake pedal that inserts unnecessary guesswork into deceleration or a steering wheel with little connection to the road isn't by itself a glaring oversight in a luxury three-rower. Taking the two together, however, leaves us wanting a little more precision and tactility.

Engine-wise, the GLS picks up where the GL left off. A 255-hp, 3.0-liter diesel V-6 moves the 350d, followed by a 362-hp 3.0-liter V-6 in the 450. The range-topping 550 packs a 449-hp 4.7-liter V-8. Each engine is turbocharged and comes paired to a new nine-speed automatic. In most driving modes, the trans, in Benz tradition, starts in second gear for cushy throttle tip-in; only sport mode engages the shortest ratio from a standstill.

In either of the gas-powered models, the so-called 9G-tronic goes unnoticed in the best way possible. Engine response is immediate, and the shift logic is sound. In

▼ SPECIFICATIONS

VEHICLE TYPE: front-engine, 4-wheel-drive, 7-passenger, 4-door hatchback

BASE PRICE (est) \$66,000-\$93,000

ENGINES: turbocharged and intercooled DOHC 24-valve diesel 3.0-liter V-6, 255 hp, 457 lb-ft; twin-turbocharged and intercooled DOHC 24-valve 3.0-liter V-6, 362 hp, 369 lb-ft; twin-turbocharged and intercooled DOHC 32-valve 4.7-liter V-8, 449 hp, 516 lb-ft

TRANSMISSION: 9-speed automatic with manual shifting mode

DIMENSIONS

WHEELBASE 121.1 in

LENGTH 202.3 in

WIDTH 76.1 in

HEIGHT 72.8 in

PASSENGER VOLUME 148 cu ft

CARGO VOLUME 16 cu ft

CURB WEIGHT 5650-5950 lb

PERFORMANCE (C/D EST)

ZERO TO 60 MPH 5.3-7.4 sec

ZERO TO 100 MPH 13.3-21.5 sec

1/4-MILE 13.7-15.6 sec

TOP SPEED 130 mph

FUEL ECONOMY (C/D EST)

EPA CITY/HWY 14-19/19-27 mpg

the 350d, though, lag is abundant, due in part to the transmission's propensity to keep the revs close to a fuel-sipping idle. It feels as if the long-stroke diesel must pass a TSA security check before full boost becomes available, and only then after a few downshifts. We loved the diesel GLs of yore because they married luxuriant torque with relative affordability. Now the GLS450 seems to be the best blend of performance and value.

Pricing hadn't been finalized at press time, but we expect the GLS models to roughly mirror the outgoing GLs' stickers, with the 350d and 450 starting just under \$70K, and the 550 starting at \$93,000 when it goes on sale this month.

The Mercedes-AMG GLS63 is also available. It carries on with the old seven-speed, but its 5.5-liter twin-turbo V-8 gets a 27-hp bump, to 577. No example was made available, but this spring we should be able to confirm that it's the only seven-passenger SUV capable of reaching 60 mph in less than five seconds. That's the kind of stat that guarantees we'll remember its name. ■

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BRUCE CANEPA

Canepa, 65, is the owner of Scotts Valley, California's Canepa Design, a refurbisher of racing icons and street legends. It's the world's greatest toy store.

C/D: What do you drive every day?

BC: We have so many cars in the system, and I do all the final road testing. Last night I was in a Mercedes 300SL roadster, and tonight I'm driving a Porsche 906. That's what happens here.

C/D: Your dad sold Lincolns, Mercurys, Renaults, and International trucks. What did you drive then?

BC: When I was old enough to drive, my dad told me I could order a new car. I had to pay the flooring interest [dealer inventory financing] and the insurance and the maintenance, and the car had to be sold in 12 months or less to pay off the flooring. I ordered things like Comets with 427s in them, with dog-dish hubcaps and 4.56:1 gears. My dad would go nuts because he couldn't understand this car on the transporter that had a price tag the size of a Lincoln, and it didn't even have a vinyl roof on it. Then, when I graduated from high school, he said: "Okay you have to attend college now. How much have you saved? You need to buy your own car. You don't need anything fancy." So, of course, I went and bought a used 427 street Cobra. I had saved like \$4000 and I found the Cobra for \$6000, and I went to my dad's banker and put \$2000 down. I kept that car for 20 years. For a long time it was the only wheels I had. I couldn't afford anything else. That was an everyday car.

C/D: Can you still drive cars like the Cobra every day?

BC: They can be driven all the time. Today I drive a Porsche 959 all the time like a regular car because it's a regular car. It's comfortable, you can throw luggage in it, you drive it anywhere you want to go, the spoiler is not a problem. The cars you can't drive all the time are a lot of the modern supercars. They're too high tech to be practical. They're too low to the ground, there's no luggage space, and they're loud all the time. And you can't park them anywhere because they draw stupid crowds.

C/D: So you don't like the Porsche 918 Spyder as much as the 959?

BC: No. The 918, the P1, and the LaFerrari are all very similar in everything they do. And they all do it absolutely great. But in a 959, the driver has a huge input in how well it does what it does.

C/D: What's your favorite car to vintage race?

BC: Oh, god. You mean favorite 10? That is impossible. It has to be my '79 Porsche 935. I've had that car since Porsche built it, and it was the last 935 built. It's the only one-owner 935 in the world, and it's as much fun as any car to drive. It's a wild man's car. It's got throttle oversteer, a motor hanging out the back, a short wheelbase, lag... if you can master a 935, you can drive anything.

C/D: Given the Steve McQueen factor, Jerry Seinfeld's Porsche 917, used in filming the movie *Le Mans*, has to be the most valuable car in the world.

BC: Well, it's not. The Ferrari brand has a different value base. It's another zero on everything. The most valuable cars right now are Ferraris. Here in our shop we have the 250LM that won



Le Mans in '65. And that is probably a \$60 million or \$70 million car. A great 917 now is a car north of \$20 million. The name does inflate that, but not like it does when there's a Ferrari with his name on it. I would imagine the McQueen 917 is a \$25 million car.

C/D: Do you ever think, "Wow, this place has gotten out of hand"?

BC: It's bigger than I thought it would be. There are 80 employees now, there are never less than 50 projects in the shop, and we now have everything in-house—composite work, steel work, aluminum work, mill work, fabrication, and all the mechanical abilities.

C/D: Have you thought about building your own car?

BC: No. Not interested. I don't know what I would build. I wouldn't want to build a modern supercar, per se. I'd rather figure out what the all-around fun car to drive was and build that. It would be like building a 1973 911S for the modern era.

C/D: So what James Glickenhaus is doing doesn't interest you?

BC: No. The problem with projects like that is that they're fads. They're good for a week. Glickenhaus's car will be obsolete in a year. Then what do you do with it? It's not a user-friendly car.

C/D: Is there anything you would have done differently?

BC: There was a time when I thought I should have gone racing full time. And I chose not to do that because I was starting my business. I thought I could do both. So there was a point when I thought I may have missed out. But now I look back and I wouldn't change it. A lot of guys who got to race don't get to do nearly as many cool things as I get to do. —JOHN PEARLEY HUFFMAN

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